PERIODICAL ROOM
GENERAL LIBRARY
UNIV. OF MICH.

June 20, 1938

STEEL

PRODUCTION • PROCESSING • DISTRIBUTION • USE

FOR FORTY-EIGHT YEARS—IRON TRADE REVIEW

LIKE A RAY OF LIGHT

Lower Cost
Longer Life
Increased Salability
Greater Strength
Lighter Weight

• Are you groping in the dark for ways and means of improving your product or the equipment you use? For countless manufacturers, ENDURO Stainless Steel has lighted the way to lower costs and increased profits. Its high resistance to rust and corrosion, its resistance to oxidation at elevated temperatures, its high strength, its permanent lustrous finish, its ease of cleaning, its freedom from contaminating influence and its workability may work wonders for you. Tell Republic metallurgists your story—and let them make suggestions based on a complete knowledge of stainless steels and their use in industry. Republic Steel Corporation, Alloy Steel Division, Massillon, Ohio—General Offices, Cleveland, Ohio.

Republic Steel

REPUBLIC STEEL
REG. U.S. PAT. OFF.

ENDURO
REG. U. S. PAT. OFF.
REPUBLIC'S PERFECTED STAINLESS AND HEAT-RESISTING STEELS

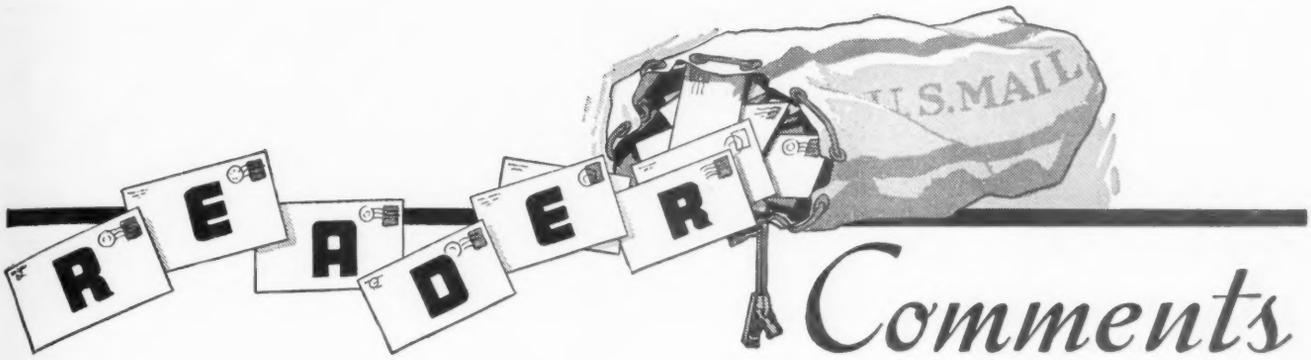
BERGER MANUFACTURING DIVISION
UNION DRAWN STEEL DIVISION · TRUSCON STEEL COMPANY
NILES STEEL PRODUCTS DIVISION · STEEL AND TUBES, INC.

Whitey Sez:

"Be sure you're right, then go ahead . . . a fitting motif for our start through production where a thorough check of the analysis and heat number of each bundle of wire precedes its fabrication."

MAURATH, INC. BUILDER OF BETTER WELDING ELECTRODES IN ALL ANALYSES

CLEVELAND



Comments

Readers are invited to comment upon articles, editorials, reports, prices or other editorial material appearing in STEEL. The editors cannot publish unsigned communications, but at their discretion may permit a writer to use a pseudonym when a bona fide reason exists for withholding his identity. Letters should be brief—preferably not exceeding 250 words.

Oldsters Get a Break

To the Editor:

Men over 45 years old have a definite place in industry.

So far as this company is concerned, our attitude in this matter has never changed. Without doubt a man's physical abilities in many cases decrease after he is 45 years old, although this is not universally true and, in fact, that age is rather young to be talking about physical disabilities.

Despite this fact, we feel that in most cases this seeming defect is more than made up by the skill and knowledge which such men have attained by a service of 25 years or more. In this connection it ought not to be lost sight of that with each passing year the increase of mechanical equipment diminishes the importance of hard physical labor. In fact we feel that in a great many cases men of much greater age retain and increase their skill which, with the much better judgment which they acquired by these years of employment, makes them of great value to our company.

We believe that this is the attitude of the best managed companies in this country and statements made to the contrary are due to ignorance of the facts or a desire to create a false impression.

C. F. BENNETT

President,
The Stanley Works,
New Britain, Conn.

P. S.—I am taking the liberty of enclosing two pages from "The Stanley World" showing the men in this company in the New Britain plants only, who have been working here for more than 40 years and who, with the exception of two, are still actively employed. A large number of these men are in important positions in our company. This may be of interest to you to confirm the statement that I have made above.

C. F. B.

British Law Worries Lewis?

To the Editor:

Study of STEEL'S analysis of the British Trade Disputes and Trade Union act of 1927 (June 13, p. 15) explains why John L. Lewis, CIO head, has opposed Mr. Roosevelt's proposal to examine into the workings of the British situation.

His recalcitrance is understandable. Although the President has disavowed any disloyalty to the CIO by denying amendment of the Wagner act is contemplated, Mr. Lewis is not so sure. Certainly any fair comparison of the British Trade Disputes act with the national labor relations act and the conduct of industrial relations in Great Britain and the United States would place both Mr. Lewis' CIO and the Wagner act in an unfavorable light.

Restrictions of labor unions such as those imposed by the British act would knock the props from under Lewis' horizontal unionization program. The British act declares illegal any strike which has for its object furtherance of a trade dispute other than within the trade or industry in which the strikers are engaged; and which is designed to coerce the government. If Lewis were not permitted to throw his coal miners around steel, or rubber, or automobile plants, where would he get?

Restrictions on picketing imposed by the British act, making a criminal offense the breaking of an employment contract where the act may endanger human life or property, would cramp Mr. Lewis' style.

Mr. Lewis undoubtedly realizes that labor unions tend to follow a monotonous course—from weakness to power to government control, or oblivion. Either of the last two phases apparently worries him.

INDUSTRIAL ENGINEER

Chicago

Lay Cards on Table

To the Editor:

Action by the Koppers Co., Pittsburgh, to personalize its financial statement so each employe may understand how it applies to him, (STEEL, June 13, page 20), is a step in the right direction, which is being taken by an increasing number of industrial concerns in recent months. If employes could realize that someone must provide $10,000 or more to provide him a place to work and in return is entitled to some compensation for the use of the money, it would help the situation.

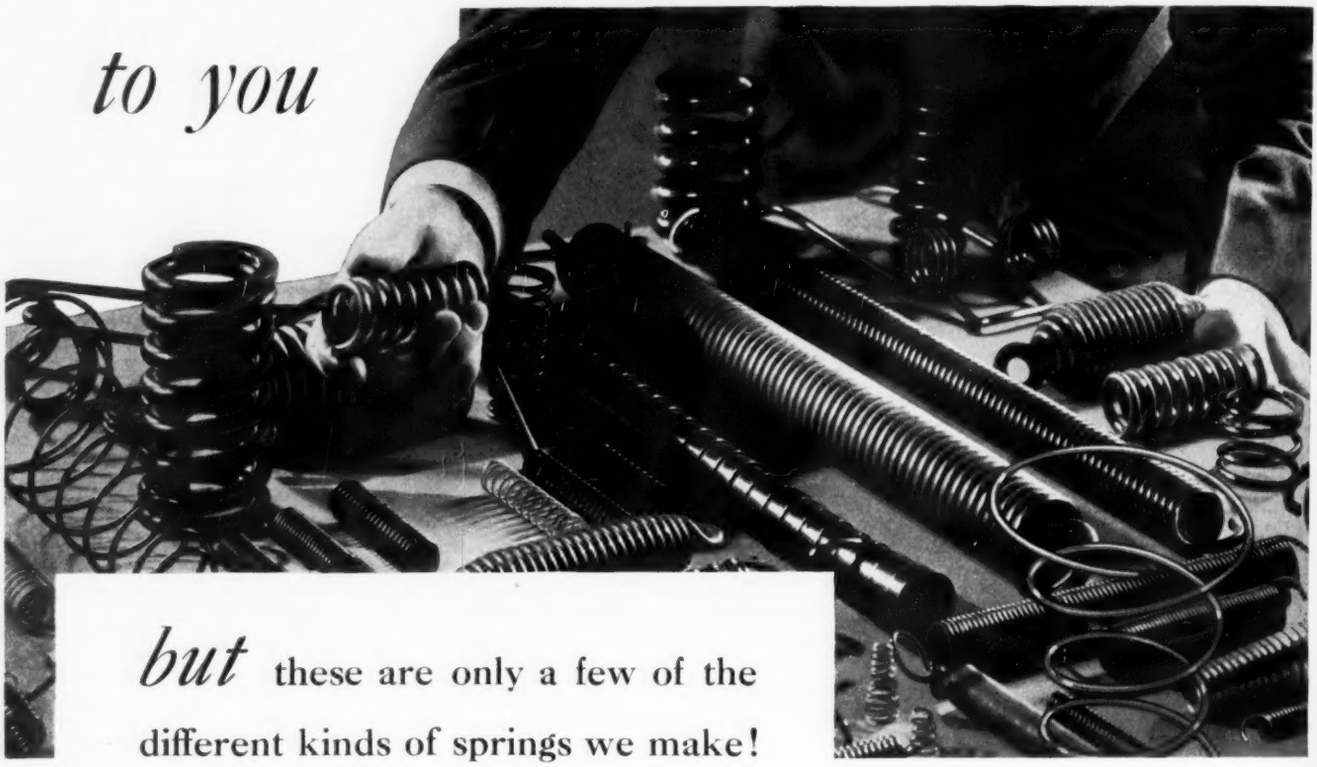
Probably a sufficient proportion of the workers are fair-minded enough to understand this situation and when it is placed squarely before them a body of opinion will be built up which will be of much value in industrial relations.

Probably the average worker thinks the capitalist who supplies the money to build and operate the plant is taking the cream of the profits, if any, while the worker gets the skim milk. Explanation of the financial setup, as the Koppers company has done, should give a better understanding and that is a long step toward confidence and support.

Straightforward statements of fact in relation to a company's oper-

(*Please turn to Page* 96)

This may look like a LOT of SPRINGS *to you*



but **these are only a few of the different kinds of springs we make!**

AMERICAN Quality Springs are made to meet any requirement. We make springs of every size and description from the tiny springs that must be observed under a magnifying glass to some of the mightiest springs in use.

Our engineers and designers are frequently called upon to work out difficult problems which involve springs of unusual design to meet unique conditions. These men are available to help you out of any difficulties you may have.

Whether the springs you use are compression, extension, torsion, or special, we are prepared to meet your needs with springs that have a reputation for strength, uniformity and skill in production. No matter what your requirements in springs may be, you can look to American Quality Springs to answer them economically and to your complete satisfaction.

AMERICAN QUALITY SPRINGS

AMERICAN STEEL & WIRE COMPANY

Cleveland, Chicago and New York

Columbia Steel Company, San Francisco, *Pacific Coast Distributors* · United States Steel Products Company, New York, *Export Distributors*

UNITED STATES STEEL

STEEL

FOR FORTY-EIGHT YEARS—IRON TRADE REVIEW

Contents

Vol. 102-No. 25 **June 20, 1938**

READER COMMENTS ... 11

AS THE EDITOR VIEWS THE NEWS ... 15

NEWS
- Many Bills Affecting Steel "Dead" as 75th Congress Adjourns ... 17
- "Teamwork for Prosperity," Theme for Detroit Industrial Conference ... 19
- Labor News ... 20
- "Steels of Today and Tomorrow," Exhibit Opened ... 21
- Steel Leads in Japanese Buying ... 22
- Steelworks Operations for the Week ... 23
- Men of Industry ... 24
- Obituaries ... 25
- Activities of Steel Users and Makers ... 26
- Meetings ... 27

MIRRORS OF MOTORDOM ... 29

WINDOWS OF WASHINGTON ... 33

EDITORIAL—Steel Is Not Doing Its Public Relations Job ... 35

THE BUSINESS TREND
- Industrial Activity Recovers Part of Recent Losses ... 36
- Charts and Statistics ... 37

TECHNICAL
- Completes New Rod Mill ... 38
- Platers Improve Quality of Coatings ... 40
- Precision in Filing Work ... 68

PROGRESS IN STEELMAKING
- Wire Manufacture ... 42

MATERIALS HANDLING
- Location Is Asset ... 47
- Tiering Nail Kegs on Pallets ... 48
- Pack Reduces Sheet Damage ... 48

WELDING
- Nuts for Welding ... 50
- Designs Presses for Arc Welding ... 55

POWER DRIVES
- Drive Mountings ... 56

METAL FINISHING
- Metallic Coatings ... 60

INDUSTRIAL EQUIPMENT ... 69

HELPFUL LITERATURE ... 73

MARKET REPORTS AND PRICES ... 75
- The Market Week ... 76

BEHIND THE SCENES ... 90

CONSTRUCTION AND ENTERPRISE ... 97

INDEX TO ADVERTISERS ... 104

EDITORIAL STAFF

E. L. Shaner
Editor-in-Chief

E. C. Kreutzberg
Editor

A. J. Hain
Managing Editor

E. F. Ross
Engineering Editor

D. S. Cadot
Art Editor

ASSOCIATE EDITORS

G. H. Manlove — J. D. Knox
J. A. Cronin — F. E. Gooding
W. G. Gude — G. W. Birdsall

New York
I. H. Such — B. K. Price
L. E. Browne

Pittsburgh — R. L. Hartford
Chicago — J. F. Powell
Detroit — A. H. Allen
Washington — L. M. Lamm

London
Vincent Delport

BUSINESS STAFF

G. O. Hays
Business Manager

C. H. Bailey
Advertising Service

New York . . E. W. Kreutzberg, B. C. Snell
Pittsburgh . . . S. H. Jasper
Chicago . . . L. C. Pelott, W. F. O'Dell
Cleveland . . . R. C. Jaenke, C. N. Schmidt

J. W. Zuber
Circulation Manager

MAIN OFFICE

Penton Building, Cleveland

BRANCH OFFICES

New York . . . 220 Broadway
Chicago . . Peoples Gas Building
Pittsburgh . 1800 Koppers Building
Detroit . 1010 Stephenson Building
Washington . National Press Building
Cincinnati . . . 582 Sinton Hotel
San Francisco . . 2413 Milvia St. Berkeley, Calif., Tel. Berk. 7354-W
London . . . Caxton House Westminster, S.W. 1
Berlin . Berlin, N.W. 40, Roonstrasse 10

• • •

Published by The Penton Publishing Co., Penton Building, Cleveland, Ohio. John A. Penton, Chairman of Board; E. L. Shaner, President and Treasurer; J. R. Dawley and G. O. Hays, Vice Presidents; F. G. Steinebach, Secretary.

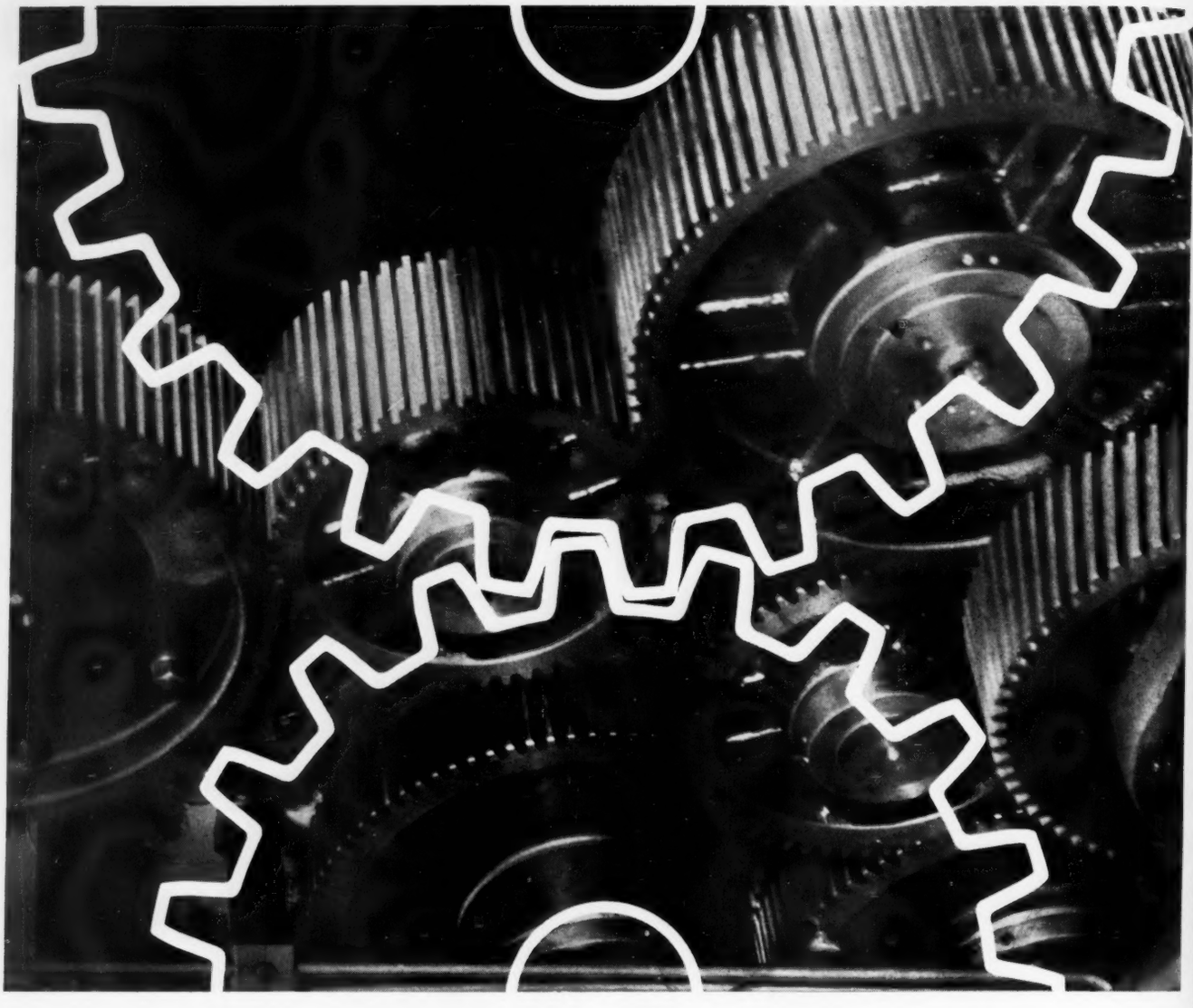
Member, Audit Bureau of Circulations; Associated Business Papers Inc., and National Publishers' Association.

Published every Monday. Subscription in the United States, Cuba, Mexico and Canada, one year $4, two years $6; European and foreign countries, one year $10. Single copies (current issues) 25c.

Entered as second class matter at the postoffice at Cleveland, under the Act of March 3, 1879.

Copyright 1938 by the Penton Publishing Co.

PRODUCTION · PROCESSING · DISTRIBUTION · USE



PRECISION GEARS AT LOW COST

THE quality of the gears in a high-grade machine tool determines its performance.

One well-known machine-tool builder finds 0.35% Moly Chrome-Molybdenum iron meeting all requirements for main and intermediate gears in an automatic crankshaft lathe. The iron is wear-resistant enough to assure maintenance of original tooth profiles, thus eliminating tool chatter. Its structure—and therefore its strength—is uniform. There is no trouble from porosity at the bases of the gear teeth. This Chrome-Moly iron also holds down production costs. It is comparatively inexpensive. It machines easily. And in the case referred to above there has never been any waste from defective castings since it has been adopted.

If resistance to wear, uniform strength, plus economical production are vital requisites in the gears, pulleys or similar machine parts you make or use, investigate Moly irons. Our book, ***"Molybdenum in Cast Iron,"*** is free to engineers and production executives. Climax Molybdenum Company, 500 Fifth Avenue, New York City.

PRODUCERS OF FERRO-MOLYBDENUM, CALCIUM MOLYBDATE AND MOLYBDENUM TRIOXIDE

Climax Mo-lyb-den-um Company

MOLY

As the Editor Views the News

■ WITH the seventy-fifth congress adjourned, industry may now consider what meager benefits it derived (pages 17 and 33) and what additional burdens were imposed upon it. Industry at last is assured of a "breathing spell," and prospects for a more constructive congress next January are more promising. The most encouraging reflection is that after the botch made of federal legislation by radicals, public sentiment again is swinging to the right. Many candidates up for re-election this fall will have difficulty in explaining why results they promised their constituents have not been forthcoming. What is needed is more teamwork, for prosperity, the theme (p. 19) developed at the Detroit industrial conference.

• • •

Steel Rate Up 1½ Points

Is steel demand rebounding from bottom, and are the first indications of the expected late summer revival being manifested? While this question cannot yet be answered definitely in the affirmative, favorable developments were reflected last week. Having made notable progress in working off inventories carried over from last year, consumers are ordering more steel (p. 75) with rush delivery asked in most cases. Under this stimulus the rate of steel production moved up 1½ points to 27 per cent of ingot capacity last week. Only a slight quickening in demand is needed to cause larger commitments. . . . A new process of coloring stainless steel, described as "revolutionary," was announced (p. 21) last week. The process, in addition to providing color, enhances corrosion resistance of the metal.

• • •

Federal Road Aid Cut

The Hayden-Cartwright bill, which authorizes federal aid for highway construction in the amounts of $158,500,000 for 1940 and $191,000,000 for 1941, has been signed by the President (p. 33) and is now law. These figures compare with $238,000,000 available for 1938 and 1939. While the federal aid thus is reduced, reports from state highway departments indicate that the national highway program will be large and that it will call for large tonnages of steel as well as for a large amount of roadbuilding machinery. . . . Unusual features are reflected (p. 23) in a new 45 x 80-inch reversing, universal slabbing mill and vertical edger now under construction for early installation. The mill will handle ingots weighing up to 45,000 pounds.

• • •

Progress in Wiremaking

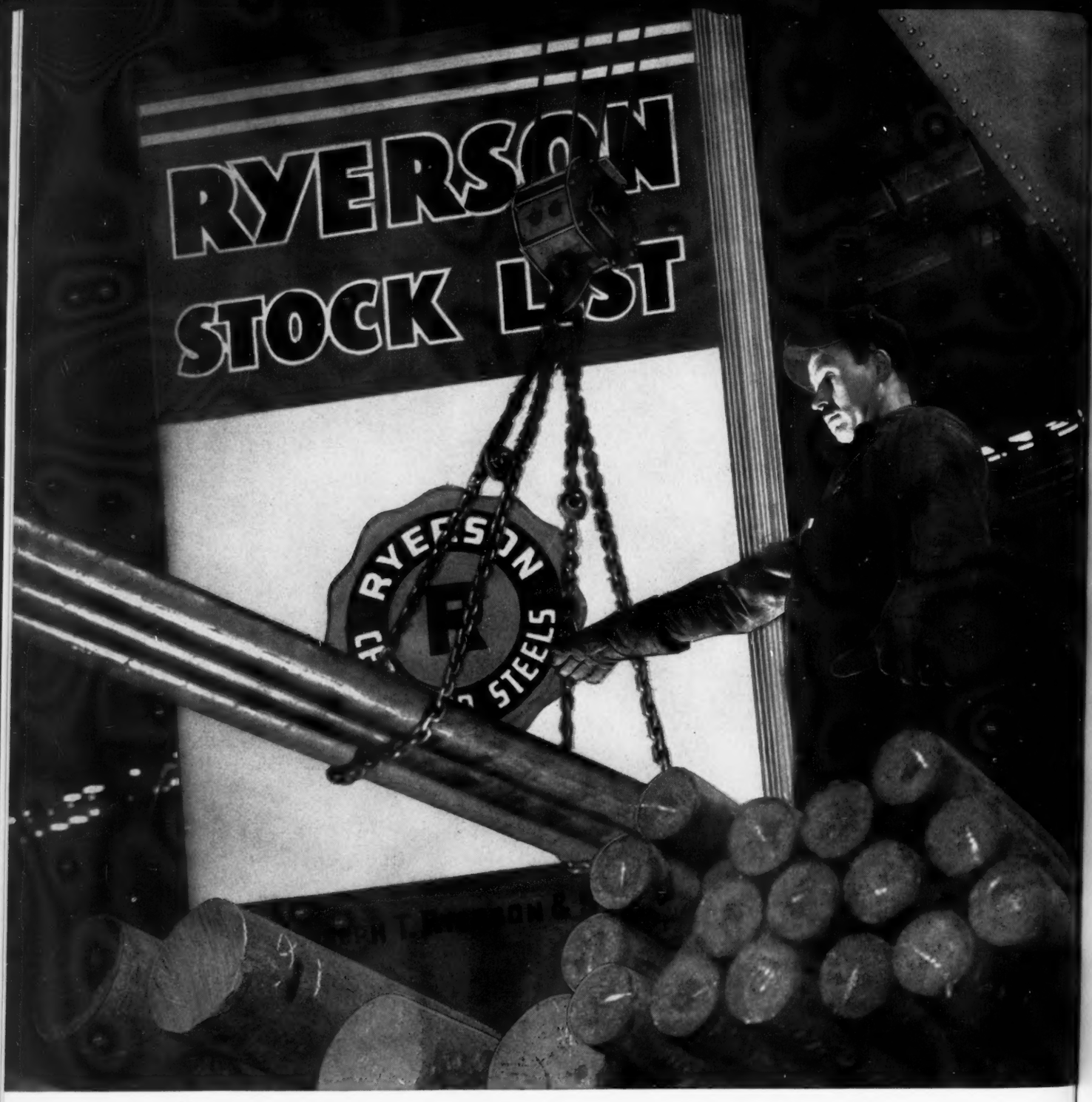
The new continuous combination rod and merchant mill at Sparrows Point (p. 38) has been placed in operation. Its product includes rod from No. 5 to ¾-inch diameter and concrete reinforcing bars and merchant bars from ⅜-inch round up to and including 1-inch square. Its capacity is 20,000 tons a month; delivery from last stand is at speed of more than 45 miles per hour. . . . Recent improvements in wire manufacture (p. 42) have resulted in a superior product with good surface finish and higher physical properties. Important progress has been made in pickling, baking and galvanizing. . . . Recently developed nuts and bolts have projections (p. 50) which permit secure welds at low current values. They are available in wide variety for special uses.

• • •

Tiering Kegs On Pallets

Many notable improvements have been made of late in "below the hook" accessories for providing additional utility in crane and hoist service. The possibilities are worthy of close study. A suspended-seat hoist carrier for handling kegs, drums and other units which may be stacked on pallets is proving (p. 48) almost indispensable in a San Francisco warehouse. . . . Quality of deposited coatings has been improved greatly, it was revealed (p. 40) at the twenty-sixth annual meeting of the American Electro-Platers' society. The society's research work continues to be pushed. . . . Bright metallic coatings, uniform even in holes, are produced by a new method (p. 60). Chemical reaction forms the coating by atom replacement.

E. L. Shaner



Your Guide to Certified, Uniform High Quality Steels

The Ryerson Stock List is your guide to large and diversified stocks of steel—the only stocks of Certified Quality Steels in the country. You have definite assurance of getting steel which has the features most desirable in the particular kind you order—whether it is a deep drawing quality sheet, high tensile structurals, easy machining screw stock or high finish stainless.

On alloy steels you get still another added feature. Ryerson sends accurate data on every bar delivered so that your heat treater can easily secure desired results—a service never before attempted by any steel-service company.

When you want good, uniform steel, turn to the Ryerson Stock List. You will find a complete range of sizes and shapes. Immediate shipment is assured.

Joseph T. Ryerson & Son, Inc. Plants at: Chicago, Milwaukee, St. Louis, Cincinnati, Detroit, Cleveland, Buffalo, Boston, Philadelphia, Jersey City.

RYERSON *Certified* STEELS

Many Bills Affecting Steel "Dead" As 75th Congress Adjourns

BY L. M. LAMM

Washington Editor, STEEL

WASHINGTON

■ THE 75TH congress adjourned *sine die* last week, which brought to an end a congress which took action on a number of matters of vital interest to the steel and other industries of the country.

In the closing days congress finally enacted an hours and wages bill and, while at the time this is written the President has not signed the bill there is no question among Washington observers but what he will sign it.

During the closing days of congress, also, a bill was passed providing for an economic committee to carry on an investigation of monopoly and antitrust laws and report to congress. The sum of $500,000 was appropriated by congress for the work of this committee until next January. All of the government departments and bureaus which have anything to do with business are to be represented on the committee, and it is expected that it will get into action shortly.

During the session congress enacted a new tax bill, which to some extent relieves a burden from business and industry.

Balked on Important Issues

While the last congress was considered to be pretty much of a rubber stamp, there were times when it refused to jump through the hoop for the President. As a typical example of this can be cited the Supreme Court issue and the reorganization of government departments.

There is every indication, however, that the President will revive the reorganization issue at the next session, and there is some talk that he might call a special session after the elections in the fall, instead of waiting for Jan. 3, the normal time for congress to convene.

While a great deal of general legislation of interest to the steel industry was passed, no bills dealing specifically with the industry became law, despite the fact a number of them were introduced during the three sessions.

It should be borne in mind that all the legislation which was on the congressional docket when congress adjourned is "dead."

The first session of the 75th congress convened Jan. 5, 1937, and adjourned on Aug. 21. A special session of congress, the second, convened Nov. 15 and adjourned on Dec. 21. This third session began on Jan. 3.

Washington Reflections

Two bills introduced during the past session particularly affected the steel industry. One of them was S. 1581, the antibasing point bill which was reintroduced early during the 75th congress by Senator Wheeler, of Montana, who had had a similar bill in the previous congress. Also a number of bills were introduced in both the house and the senate which would have prohibited the exportation of iron and steel scrap, except under government license. No action was taken on any of these bills.

S. 1490 was introduced during the first session of congress by Senator Bone, of Washington, and provided that all naval vessels, ordnance, etc., should be constructed or manufactured in government establishments. Not even hearings were held on this bill.

S. 1581, the Wheeler antibasing point bill, was referred to the senate committee on interstate commerce, but no hearings were held and no action taken.

Scrap Bill Fails To Pass

Senator Schwellenbach, of Washington, introduced S. 2025 during the first session "to provide for the protection and preservation of domestic sources of steel scrap." This bill was referred to the committee of military affairs and a one-day hearing was held by a subcommittee last year.

Senator Miller, of Arkansas, introduced a bill, S. 3460, early this year "to provide for the common defense by acquiring domestically-mined manganese ores and concentrates essential to the manufacture of supplies for the armed forces in time of emergency." No action was taken on this bill.

Owing to the fact that government experts were unable to agree on the Miller bill, Senator Thomas, of Utah, introduced a bill, S. 4012, as a substitute for the Miller bill "to provide for the common defense by acquiring stock of strategical and

critical raw materials, concentrates and alloys essential to the needs of the industry for the manufacture of supplies for the armed forces and civilian population in time of a national emergency." No action was taken on this bill.

Senate joint resolution 180 was introduced by Senators Bridges, of New Hampshire and Berry, of Tennessee, to create a joint congressional committee on conservation and preservation of iron ore and steel and iron scrap. No action was taken on this resolution and no hearings were held.

H. R. 2907 was introduced by Representative Johnson, of Minnesota, which provided for government monopoly of the armament and munitions industry, but on which no action was taken.

H. R. 5408, a proposed amendment to the tin act, was passed by the house, but did not pass the senate.

Several bills and resolutions were also introduced in the house providing for the preservation of domestic sources of steel scrap and also, in some cases, prohibiting the export of this scrap except under government permit. One bill, H. R. 6278, was introduced by Representative Kopplemann, of Connecticut, and H. R. 7457 was introduced by Representative Crawford, of Michigan.

H. R. 6322 was introduced by Representative McReynolds, of Tennessee, to provide for a continuing supply of tin ore and a tin preservation bill, H. R. 6621, was introduced by Representative Hoffman, of Michigan.

Representative Kopplemann also introduced H. R. 7967 which provided for the conservation of domestic supply of certain materials and which prohibited the export, except under government license, of iron ore, pig iron, and scrap. Representative Boren, of Oklahoma, also introduced a bill, H. R. 8429, which would have prohibited the exportation of scrap iron and other iron products.

Would Nationalize Industry

Representative McReynolds also introduced H. R. 9154 which provided for co-operation between the United States and foreign nations producing tin ore to assure a continuing supply to the United States.

Representative Teigan, of Minnesota, introduced H. R. 10504 which provided for the acquisition by the federal government of the iron and steel industry of the United States.

House resolution 134 was introduced by Representative Ellenbogen, of Pennsylvania, providing for the appointment of a committee of the house to investigate the economic conditions in the steel industry.

House joint resolution 245, providing for construction of a government steel plant at League Island, Philadelphia, was introduced by Representative Stack, of Pennsylvania.

Representative White, of Ohio, introduced house joint resolution 451, providing for creation of a joint congressional committee on conservation and preservation of iron ore and steel scrap, and Representative Lamneck, of Ohio, introduced a similar resolution.

House joint resolution 466, introduced by Representative Crawford, of Michigan, provided for an embargo on scrap iron and pig iron whenever the President declared an arms embargo.

Representative Case, of South Dakota, introduced a resolution which would have prohibited the state department from reducing the tariff on manganese ores.

As already stated, no action was taken on any of these bills or resolutions and, except as otherwise stated, hearings were not even held.

Steel Refinery Tower, 92 Feet Long, Weighs 245 Tons

■ **This steel fractionating tower is 92 feet long, weighs 245 tons. It is one of the largest ever built and reported to be the largest single piece of industrial equipment ever made in St. Louis. Designed by Lummus Co., New York, and manufactured by Heine Boiler Division, Combustion Engineering Corp., New York, for a Pure Oil Co. refinery at Smith's Bluff, Tex., its size presented a difficult transportation problem. Two special 200-ton capacity cars with 16 wheels each and an extra flat car were required. Wide World photo**

FORMULA FOR MORE JOBS: REVERSE THE NEW DEAL

■ Governmental policy toward industry must be completely reversed and left alone if industry is to re-employ America's 12,000,000 idle, stated J. F. Lincoln, president, Lincoln Electric Co., Cleveland, last week.

"At present the number of people who can be employed in industry is decreasing. During the last six years more than $20,000,000,000 has gone out of industry into other fields or into banks. That means fewer jobs.

"The damage already done by government interference is to a large extent permanent and this generation cannot recover all the ground lost. The best they can do is turn retreat into advance.

"Our railroads show the full flower of governmental regulation and interference. They were removed from private initiative 40 years ago and 'regulated by government'; the added cost so far to the taxpayer has exceeded $30,000,000,000 in higher rates and insolvent roads," he declared.

"We have not yet met our crisis. That will come when we find that our governmental income, which is decreasing yearly, cannot be brought up to our governmental expenditure for relief, pump priming and other political expedients. When that time comes our crisis will be on us. Dictatorship or freedom will be the answer. We cannot escape treading the road back. We can only determine whether we will do it as convicts or as free men. We will then decide whether government is made for man or man for government."

"Teamwork for Prosperity", Theme Of Detroit Industrial Conference

■ "WHAT we need today is an economic constitution—a declaration of those fundamental principles under which a democratic people can maintain a competitive system of private enterprise that will offer to every person capable of self-support the opportunity to earn a decent livelihood."

Donald R. Richberg, former NRA chief, spoke these words at a conference sponsored by the National Industrial Advertisers' association and Associated Business Papers Inc. in Detroit's Masonic Temple, Tuesday, June 14.

Representatives of industry, labor and government stressed need for co-operation of all three groups toward prosperity. More than 700 attended the luncheon meeting to hear addresses by Bennett Chapple, vice president, American Rolling Mill Co.; Louis G. Hines, director of organization for the American Federation of Labor; and Mr. Richberg.

The meeting was the third of this character to be held in recent weeks; others were in New York and San Francisco, under different auspices. They were arranged in hope that by assembling the viewpoints of government, industry and labor, it will be possible to develop a formula which will bring about harmony between these groups and facilitate peaceful progress toward a renewed prosperity.

Mr. Richberg cited the urgent need to "consolidate the power of all the people, regardless of party, creed or class, who want an opportunity to work together, to unite them in a League for Peaceful Progress, to unite them in a national drive against the bullies, the rowdies and the warmakers in public and private life who are dividing the American people into warring classes when the overwhelming majority want to live and work in peace."

Cost of Fighting High

Possibility of such an economic system and such co-operation only recently was discovered, said Mr. Richberg.

"We have today available a great variety of business organizations through which either a few men with little money, or thousands of men with a huge capital, can co-operate. . .

"If we have the desire, we can create organizations capable of developing a prosperous, enduring civilization. The major problem is to create a national purpose and a national demand that responsible representatives of management, labor and government lay down the weapons of warfare, sit down around the council tables of peace, and do the job . . . .

"We do not need any patented programs of reform. We need the composite wisdom of many minds. We do not need to search for panaceas. There is none. We do not need any more fighting leaders to array one class against another. We have been taught enough bitter lessons about the cost of fighting each other and the emptiness of our victories."

Discussing pro and con the government's role—as umpire and participant—Mr. Richberg said:

"We have a right to demand that a public official hold the scales even. He is a sworn trustee of the public interest. We cannot expect competitors in business to be unbiased or to yield their private interests to advance our probably biased conception of the public interest.

"We can look only to government for a fair weighing of these conflicting claims. We can rely only upon government to use force impartially to preserve the peace. Thus when we turn to government for aid in a private war, we are asking public servants to betray their obligations to all the people."

Labor Gets Lion's Share

Pointing to the magnitude of the economic system to which this generation has been heir, Mr. Chapple called attention to the disputes over distribution of the fruits of the system, particularly the claim that workers do not receive their fair share.

"Not long ago, after a careful study, the department of commerce issued a report which shows labor receives 85 cents out of every dollar of manufacturing income. The remaining 15 cents goes for taxes, depreciation, dividends and surplus. How different this is from the popular conception that the working man receives less than 10 per cent of industry's dollar.

After reviewing a number of measures by industry to promote understanding, Mr. Chapple summed up four things which business can do to streamline its activities with the present day, based on suggestions of men who have spent years studying the requirements of industrial progress.

The suggestions were:

1. Develop a platform of fair and equitable employe relations—of prime importance because, when industry solves its human problems, it goes a long way toward

"Government, Industry and Labor"

■ Speaking on "Teamwork for Prosperity" in Detroit—see accompanying article—were (left to right) Donald R. Richberg, former NRA co-ordinator; Bennett Chapple, American Rolling Mill Co., and Louis G. Hines, American Federation of Labor

finding an answer to its physical problems.

2. Promote constant research to improve products and processes and to develop new markets, since industry grows by meeting new needs or meeting old needs better and must translate science and research into things of actual service.

3. Welcome legitimate competition in a spirit of true sportsmanship; most of industry's troubles and most of the punitive legislation have come about through the actions of a few unprincipled competitors.

4. Generate public confidence by taking the mystery out of business and emphasizing the value of successful industry to all.

Understanding Essential

In conclusion, Mr. Chapple observed that "human confidence and understanding are always essential to worthwhile achievement. It looks like what we need most today is for government, industry and labor to dust off the Golden Rule and let its light shine on our joint determination to make this country a still better place in which to live."

Speaking for William Green, president, and the executive council of the American Federation of Labor, Mr. Hines reviewed some of the aims and principles of the AFL.

He emphasized the desire of that group to promote better co-operation between labor and industry. In substance the AFL program looks toward higher wages, shorter working hours and an end to sweatshop conditions.

"While organized labor has been intensely practical in the application of its principles," said Mr. Hines, "I believe there is enough idealism in the hearts and minds of our people to prompt us to hope that the day is not far distant when we may be able to substitute co-operation for industrial warfare, and I believe that we can dare to hope that a psychology may be developed in this country that will subscribe to a new philosophy that will place the welfare of the many before the interests of the few."

Portions of the meeting were broadcast by CKLW; addresses of Mr. Hines and Mr. Chapple were repeated later in the afternoon for radio listeners.

The meeting was under direction of E. C. Howell, Carboloy Co. Inc., Detroit, and president of the Detroit Industrial Marketers association. Speakers were introduced by J. H. Van Deventer, editor, *The Iron Age*.

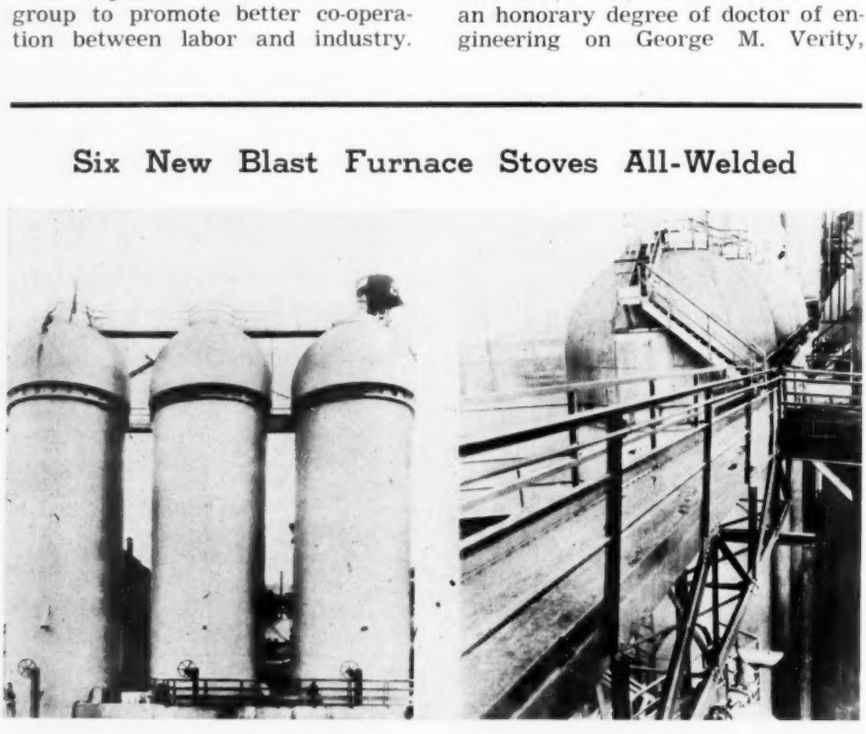
Verity Given Honorary Degree for Fair Dealing

■ Stevens Institute of Technology, Hoboken, N. J., last week conferred an honorary degree of doctor of engineering on George M. Verity, chairman, American Rolling Mill Co.

Complete citation reads:

"George Matthew Verity: founder, president, and now chairman of the American Rolling Mill Co.; a manufacturer who developed a small sheet metal shop on the river front of Cincinnati into a great independent unit of the steel industry, employing up to 18,000 workers; an industrial administrator who, knowing men as well as materials, has conducted the human affairs of his company with such justice and consideration that in 38 years no disagreement has ever arisen between management and men; an author whose chief published work is a code of fair dealing; a good citizen loved in his community, trusted in his factories, and respected throughout American industry."

Six New Blast Furnace Stoves All-Welded



■ **Six all-welded blast furnace stoves, erected recently at a Pennsylvania steel mill, are believed to be the first of the type in this country. At the left are three built by Pittsburgh-Des Moines Steel Co., Neville Island, Pittsburgh; at right, three erected by Chicago Bridge & Iron Co., Chicago. Use of welding is said to have saved 30 per cent in weight, 50 per cent in construction time. Welding was done with Lincoln Electric Co. shielded-arc equipment. Each stove is 24 feet in diameter, 104 feet high, tested to 45 pounds pressure**

LABOR

LABOR BOARD REFUSES TO BE SPECIFIC IN ARMCO CHARGES

■ MOTION by the American Rolling Mill Co., Middletown, O., to make charges against the company's Ashland, Ky., plant by the national labor relations board definite and specific last week was denied "without prejudice to be renewed before the trial examiner."

Board's complaint charged the company with numerous vague offenses under the Wagner act without specifying when, where or how they were committed.

However, Philip G. Phillips, regional director for the board, took no action on the company's motion to strike out charges the company had dominated the Ashland municipal elections.

"The company intends to press fully its position with reference to the right of free speech, the right of its officers and employes to participate in municipal elections, unhampered and free of censorship of the labor board," said C. H. Murray, assistant to the president.

"The complaint clearly attacks the rights of citizens who are working for a company in which the CIO is attempting forcibly to inject itself.

"If this charge is upheld, no employe of a company can participate in an election without fear of being brought before the labor board. In other words, the national labor relations board would be in a position to dominate municipal, state or national elections."

Michigan Raises Iron Mine Tax Valuations

■ Michigan state tax commission has announced a $4,257,000 increase in the assessed valuation of Upper Peninsula iron mines, bringing the total to $66,696,000.

Marquette county mines were giv-

en a $2,690,000 increase that raised total assessed valuations to $28,511,000. Gogebic county mine values were raised $1,207,000 to $23,926,000; Iron county $175,000 to $12,558,000; and Dickinson county $185,000 to $1,681,000. Baraga county valuations remain unchanged at $20,000.

Figures are subject to alteration by boards of review following formal hearing of protests. Some mine operators last week had filed protests, claiming development work on the properties did not warrant such sharp increases.

John N. Fegan, chairman of the tax commission, said the increases would have been more severe had the commission abided by what he termed "the usual formula." Valuation increases, he said, were tempered to meet "the present depressed conditions of the iron and steel industry."

Bar Iron Mill Wage Conference Begins

■ The annual wage conference between the Western Bar Iron association and the Amalgamated Association of Iron, Steel and Tin Workers was scheduled to begin in Pittsburgh, Saturday, June 18. Representatives will consider renewing or modifying the annual wage scale that expires June 30.

"Steels of Today And Tomorrow"

■ A NEW procedure of coloring stainless steel, described as "revolutionary," was announced last week at the opening of an exhibit, "Steels of Today and Tomorrow," sponsored by Allegheny Steel Co. and Ludlum Steel Co.—which are soon to merge—at the New York Museum of Science and Industry.

The process is not one of applying the coloring to the surface, but of developing it in the steel, which, it is said, also enhances the corrosion-resisting and stainless properties.

The colors range in fine gradations from a light yellow to a gray, so dark as to be almost black. The process was developed by the Ludlum company. Samples were placed on display.

Exhibit Is Liaison Force

H. G. Batcheller, Ludlum president, emphasized that the objective of the new exhibit is primarily that of functioning as "a liaison force between the steel industry and the thinking public." One section, he said, will be devoted to continuously changing exhibits of manufacturers of consumer goods, regardless of their source of steel supply.

Stainless steel in a multitude of home applications both inside and out, are exhibited, including Ludlum's new product Ludlite, a very thin stainless sheet. Various new tool steels, also Nitralloy, stainless tubing and wire, Allegheny metal and Allegheny's various silicon transformer steels are included in the exhibit.

A natural color sound film is in regular operation. In this film emphasis is placed more on consumption and application of steel than on production. The adaptability, convenience, low cost and attractiveness of stainless steel in home applications are featured.

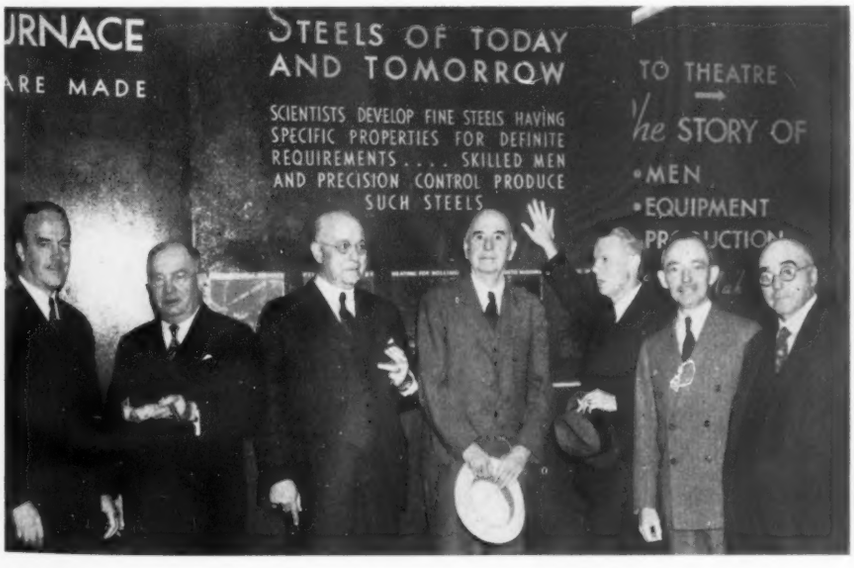
"Abundance of Enterprise"

Mr. Batcheller, in his remarks, at a preview attended by representatives of the press, banking fraternity and industry, pointed out that steel has been a dynamic force in raising the American standard of living far above that of any other nation in the world. He said that approximately 500,000 men are employed in the industry at wage rates which in 1937 were 25 per cent above 1929 and triple the average wage rate paid to steelworkers in eight foreign countries. Taxes paid last year were equivalent to $330 for each worker employed.

He expressed the belief that growth of the steel industry in America was not so much due to an abundance of raw materials as to an abundance of private enterprise and initiative.

He thought an effort should be made to tell the story of steel in a manner more appropriate to present time and environment. The facts are available and it is the choice of industry itself as to whether "public opinion of the steel industry should be founded on prejudice or on truth."

At Opening of New York Steel Exhibit


URNACE
ARE MADE
STEELS OF TODAY
AND TOMORROW
SCIENTISTS DEVELOP FINE STEELS HAVING SPECIFIC PROPERTIES FOR DEFINITE REQUIREMENTS . . . . SKILLED MEN AND PRECISION CONTROL PRODUCE SUCH STEELS
TO THEATRE
The STORY OF
•MEN
•EQUIPMENT

■ Among those who attended the opening of the exhibit "Steels of Today and Tomorrow" in the New York Museum of Science and Industry were, left to right: Hiland G. Batcheller, president, Ludlum Steel Co., and president-designate, Allegheny Ludlum Steel Corp.; C. G. Bunnell, Westinghouse Electric & Mfg. Co.; A. F. Dohn, vice president, Ludlum; W. B. McSkimmon, president, Union Twist Drill Co., Athol, Mass.; E. B. Cleborne, president, Wallingford Steel Co., Ludlum subsidiary; G. F. Ahlbrandt, assistant vice president, American Rolling Mill Co., Middletown, O., W. J. Filbert, former comptroller and former chairman, finance committee, United States Steel Corp.

Foundry Equipment Orders Turn Upward

■ Orders for foundry equipment made a small gain in May, the net order index being 90.6, compared with 79.3 in April and 237.6 in May, 1937, according to the Foundry Equipment Manufacturers' association. Shipments, on the other hand, dropped from 93.4 in April to 91.3 in May, compared with 226.2 in May last year.

The unfilled order index for May was 157.5, compared with 158.2 in April and 376.8 in May, 1937. Three months' average of gross orders was 94.9 in both April and May, compared with 248.1 for May, 1937. Indexes are based on 1922-24 as 100 per cent.

Steel Leads in Japanese Buying

■ AS A result of the war, Japan's purchases of steel and machinery have been greatly increased, according to Eliot Janeway, an economist, who has compiled some economic data for the American council, Institute of Pacific Relations, not a governmental organization.

Of the new American exports to Japan, steel is the most important, despite the plans of Tokyo authorities to restrict steel imports. In 1936 Japan purchased only 56,308 tons of iron and steel from the United States. In 1937 this figure had risen to 990,000 tons, with scrap imports also showing a substantial increase. In spite of these export increases, Japan's purchases accounted for only 3 per cent of total American steel consumption in 1937.

While Japan is still suffering a severe steel shortage, evidenced in the banning of hundreds of important commercial projects involving the use of steel, and an increase in Japanese steel purchases in the United States may be envisaged, Mr. Janeway believes "they will not for many years exercise more than a marginal influence upon the domestic market."

With the overtaxing of Japan's metalworking industry has come an increased demand for machine tools. Despite Japanese subsidies for production of machine tools, domestic firms cannot make deliveries Japanese imports of metalworking equipment increased from $30,000,000 in 1936 to $53,000,000 in 1937, with $30,000,000 of that coming from the United States.

Mr. Janeway shows English and Japanese imports, combined, for 1937 barely topped domestic orders received by the industry in the year's best month, but in January, 1938, they absorbed 63 per cent of the total.

Foreign orders, Mr. Janeway observes, in this case provide backlogs to American production, but warns this is a specialized industry and the inflated volume of foreign orders is a mere fraction of the industry's normal domestic orders.

Resistance Welder Group To Formulate Standards

■ Plans for speedily developing standard transformer specifications were approved by the Resistance Welder Manufacturers' association at a meeting in Detroit, June 9. A. D. Jardine, Welding Machine Mfg. Co., Detroit, was authorized to take charge of this work and to present recommendations at the association's next meeting in Detroit, July 13.

In view of the fact that manufacturers of various types of controls will be interested in this and other projects contemplated, the association will permit them to enroll as associate members so that they can participate actively in considering the questions.

Members attending the meeting were convinced that opportunity exists for constructive co-operation for general improvement of conditions in the industry. Several projects are listed tentatively for consideration as soon as work now pending is concluded.

Electroplaters Elect Officers at Convention

■ William Phillips, research engineering department, General Motors Corp., Detroit, was elected president, American Electro-Platers' society, at the organization's twenty-sixth annual convention in Milwaukee, June 13-16. He succeeds A. B. Wilson, metallurgist, Chevrolet division, General Motors Corp., Detroit, who was elected to the board of directors.

R. M. Goodsell, president, Racine Plating Works, Racine, Wis., was named first vice president; Fred Fulforth, Proctor Electric Co., Philadelphia, second vice president; and Joseph Downes, Remington-Rand Co., Middletown, Conn., third vice president.

W. J. R. Kennedy, 90 Maynard street, Springfield, Mass., continues as executive secretary.

Asbury Park, N. J., will be the place for the 1939 annual convention which will be conducted jointly with the International Electro Depositors' Technical society, London, England. The date, still undecided, will be in June. Arrangements for the convention are in the hands of the society's Newark, N. J., branch.

A resume of early technical sessions at the Milwaukee convention appears on page 40.

Form Organization for Regenerative Furnaces

■ As a result of a recent reorganization, the Loftus Engineering Corp., 509 Oliver building, Pittsburgh, has been formed to handle engineering problems relating to design, construction, and operation of regenerative furnaces.

Because of the increasing use of the Loftus checker system it has been necessary to establish an independent engineering concern. Fred H. Loftus, who has had extensive experience in this field in the past 20 years, will head the organization. Robert G. Loftus, formerly of Chicago, will be in charge of sales.

Stainless Steel Resists Textile Dyes

■ **Stainless steel dye beams for textile mills are not corroded by dye solutions, remain smooth. They weigh 270 pounds, much less than some other metals formerly used, thus putting less strain on the warp in unwinding. Beam shown here is of Enduro stainless made by Republic Steel Corp., Cleveland; perforated by Mecklenberg Iron Works, Charlotte, N. C., and assembled by the user, Wade Mfg. Co., Wadesboro, N. C., which installed its first stainless beam three years ago and now has 32**

PRODUCTION

■ SUBSTANTIAL increase in steelworks operations at Pittsburgh, several smaller gains at other points, with only one center reporting a loss, raised the national rate last week 1.5 points to 27 per cent, the highest level for June.

Cleveland — Unchanged at 31 per cent with probability of a slight decline this week, one producer planning to drop at least one open hearth.

Youngstown, O. — Advanced 2 points to 27 per cent, 26 open hearths and two bessemer converters being active. Schedules for this week indicate a further rise, possibly to 29 per cent.

St. Louis — For the third consecutive week production is at 39.3 per cent with probability of no change this week.

Birmingham, Ala. — Steady at 58 per cent, with 12 open hearths in service. Closing of Ensley rail mill at the end of last week probably will bring a drop in the rate this week to about 42 per cent.

Pittsburgh — Rose 4 points to 23.3 per cent, due to wider variety of mill specifications, necessitating heavier production.

Wheeling — Declined 3 points to 35 per cent, one open hearth being taken out of service.

Central eastern seaboard — Advanced ½-point to 26 per cent, one plant previously down operating two furnaces. Other producers held steady.

Buffalo — Gained 5 points to 28 per cent, two additional open hearths being lighted. Indications are for the same rate this week.

Cincinnati — Open-hearth activity increased 12 points to 28 per cent. One mill with no furnaces operating is rolling at about 50 per cent of finishing capacity, from ingot stock.

Chicago — Unchanged at 22 per cent, the first time in six weeks that there was no decline.

New England — Steady at 25 per cent with indications of a lower rate next week, one open hearth to be dropped.

Detroit — Up 3 points to 21 per cent, two furnaces being added Thursday. Six open hearths now are in operation.

District Steel Rates

Percentage of Ingot Capacity Engaged in Leading Districts

	Week ended June 18	Change	Same week 1937	Same week 1936
Pittsburgh ..	23.3	+ 4	92	67
Chicago	22	None	63.5	71
Eastern Pa...	26	+ 0.5	67	45.5
Youngstown..	27	+ 2	30	78
Wheeling	35	− 3	93	71
Cleveland	31	None	46	82
Buffalo	28	+ 5	89	84
Birmingham..	58	None	83	54.5
New England.	25	None	82	83
Cincinnati ...	28	+12	93	76
St. Louis.....	39.3	None	93	†
Detroit	21	+ 3	97	100
Average....	27	+ 1.5	75.5	70.5

†Not reported.

Auto Output Gains

■ Automobile production last week was 41,790, compared with 40,175 units the week before, according to *Ward's Reports*. In the corresponding week of 1937, output was 111,620. Comparisons:

	Week ended June 18	June 11
General Motors	18,175	17,700
Chrysler	6,195	6,195
Ford	11,810	11,775
All others	5,610	4,505

Monthly and yearly comparisons will be found on page 30.

Domestic Machine Tool Orders Lowest since 1934

■ Machine tool orders index continued to decline in May to 66.7, lowest since April 1935, according to National Machine Tool Builders' association, Cleveland. The May figure compares with 90.3 in April, and 208.5 for May 1937.

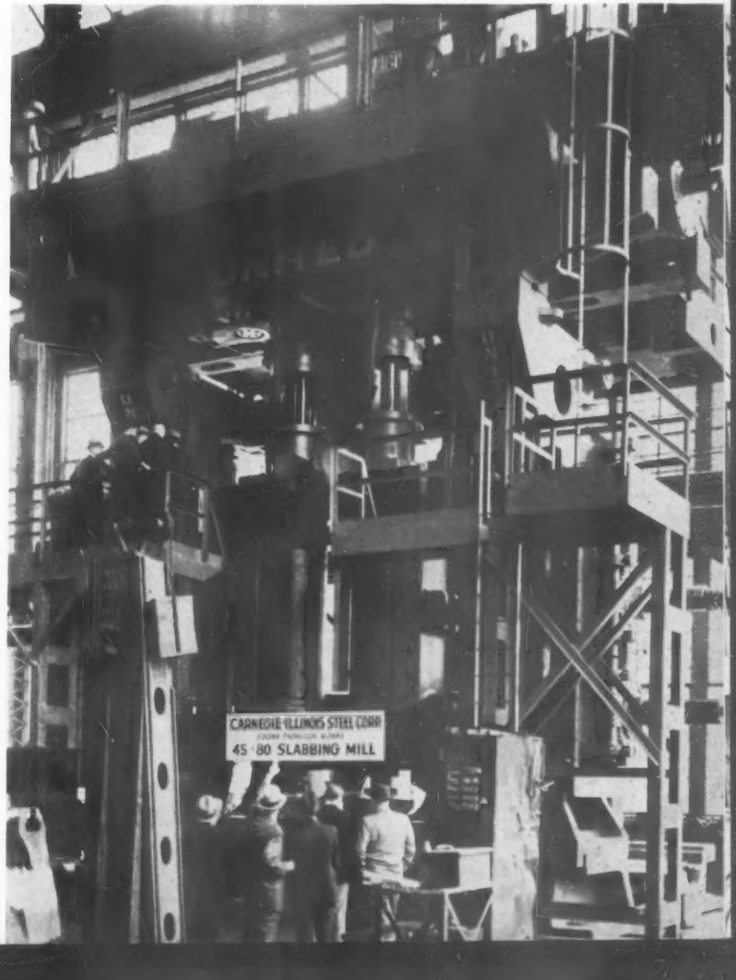
Domestic orders index reached the lowest level since September, 1934, when it was 29.4. April's domestic index was 43.9 while in May 1937 it stood at 161.4.

Foreign orders were 47 per cent of the total. Export shipments index was 31.9 in May, compared with 46.4 in April, and 47.1 in May 1937.

Washer Makers To Meet

■ Plain Washer Manufacturers association will hold its annual meeting at Hotel Sylvania, Philadelphia, June 24. William F. Disch, secretary-treasurer, Wrought Washer Mfg. Co., Milwaukee, is president of the association.

Large Slabbing Mill Has New Features



■ More than 500 visitors on one preview day recently saw this 45 x 80-inch reversing, universal slabbing mill and vertical edger being built in United Engineering & Foundry Co.'s Youngstown plant for Carnegie-Illinois Steel Corp.'s Edgar Thomson works.

Each mill housing weighs 131 tons, required the pouring of 415,000 pounds of steel. The mill will handle ingots up to 45,000 pounds and produce slabs up to 8 x 60 x 240 inches.

Each horizontal roll has a 5000-horsepower motor. A 3000-horsepower motor drives the 36-inch diameter vertical rolls through a new type of drive, expected to save between 500 and 1000 horsepower by reduced friction. Other features permit vertical rolls to be turned end for end. These rolls may be changed in one hour, about one-twentieth of the time usually required.

MEN OF INDUSTRY

■ C. E. GUTTRIDGE, heretofore manager of sales, Oliver Iron & Steel Corp., Pittsburgh, has been made assistant to the president. John W. Braffett, who was associated with the Detroit sales office of Republic Steel Corp., has rejoined the Oliver organization as general manager of sales, black hardware division. Prior to going with Republic about two years ago, Mr. Braffett was Detroit representative for the Oliver corporation.

♦

H. B. Rice, formerly vice president, Metalspray Co. Inc., Los Angeles, has joined the engineering department of the Metallizing Co. of America Inc., Los Angeles.

♦

Frank Weiss, purchasing agent, Hyatt Bearings division, General Motors Corp., Harrison, N. J., has completed 25 years of service with Hyatt. He joined the organization as purchasing agent in May, 1913.

♦

T. G. Roberts, formerly assistant district sales manager at Philadelphia, for Jones & Laughlin Steel Corp., has become associated with the Philadelphia Steel Sales Co., that city.

♦

W. E. Crawford, A. O. Smith Corp., Milwaukee, has been elected chairman, Milwaukee section, American Institute of Electrical Engineers. Fred W. Bush, Allis-Chalmers Mfg. Co., has been elected secretary.

♦

V. P. Rumely has been named Chicago works manager of Crane Co., Chicago. He formerly was affiliated with Hudson Motor Car Co., Detroit, and was past chairman of the Detroit section, Society of Automotive Engineers.

♦

DeNyse W. Atwater, manager of commercial engineering, lamp division, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., has been elected president, Illuminating Engineering society, for the year beginning Oct. 1, 1938.

♦

Ray F. Jehl, for the past ten years Chicago branch manager for Micro-Westco Inc., in charge of the Westco pump division, has become associated with Aurora Pump Co., Aurora, Ill., as manager of sales at Chicago, with headquarters at 37 West Van Buren street.

♦

J. Pierre Vogel has joined the engineering sales organization of Link-Belt Co., with headquarters in Pittsburgh, from which point he will

John W. Braffett

specialize on the application of bituminous coal preparation plant equipment, including coal tipples, washeries and other materials handling problems.

♦

Robert Grant has resigned as manager of assembly operations in the Racine, Wis., plant of Nash Motors Co., Kenosha, Wis., to join the Fuller-Johnson Corp., Detroit, manufacturer of electrical appliances, as a director and vice president.

♦

Walter E. Schutz, Perfex Corp., Milwaukee, has been elected president, Milwaukee Association of Purchasing Agents. Prescott C. Ritchie, Waukesha Motor Co., is the new vice president; James Tate, Delta Mfg. Co., secretary-treasurer. Arnold Andrews, Bucyrus-Erie Co., South Milwaukee, was elected a director for three years.

♦

Raymond M. Dennis, heretofore superintendent of flanging, Lukens

R. M. Dennis

Steel Co., Coatesville, Pa., has been promoted to general manager of the flanging department, in charge of estimating, sales and production. Prior to joining Lukens in April, 1925, as press foreman in the flanging department, he was associated with the Lenape Hydraulic Pressing & Forging Co., Lenape, Pa., as secretary and shop superintendent.

♦

Comfort A. Adams, consulting engineer, Edward G. Budd Mfg. Co., Philadelphia, and A. C. Fieldner, chief mechanical engineer, bureau of mines, Washington, are among nine new members appointed to the advisory committee of the thirteenth Exposition of Power and Mechanical Engineering to be held at Grand Central Palace, New York, Dec. 5-10.

♦

Douglass W. Peabody, Atlanta, Ga., has been named representative of the Trundle Engineering Co., Cleveland, management and industrial engineers, for the district embracing Georgia, Alabama, Tennessee, North and South Carolina. Mr. Peabody was associated with General Electric Co. for 25 years and was its manager of industrial sales in the Southeast for some years prior to becoming a consulting engineer.

♦

A. N. Voripaieff has been appointed to the New York staff of A. M. Byers Co. to handle eastern marine sales of wrought iron products. He will be associated with D. B. McDonald, New York division manager, and W. J. Wignall, manager of marine and railroad sales. Mr. Voripaieff formerly was associated with the Reading Iron Co. as assistant manager of the New York office and also had been associated with Babcock & Wilcox Tube Co. in a sales capacity.

♦

James A. Cranston retired June 1 from active service as commercial vice president for General Electric Co. at San Francisco. Mr. Cranston had an important part in the electrification of the lumber, mining and shipping industries on the Pacific coast. He first began selling electricity and electrical equipment for the old Thomson-Houston Co. in 1889 and when that company became a part of General Electric in 1892, he became manager of the Northwest territory with headquarters in Portland, Oreg. In 1923 he went to San Francisco as Pacific coast manager and in the same year was elected a commercial vice president. He will be available for consultation and will retain an office in the San Francisco headquarters.

♦

C. D. Macpherson, of the hoist and body division of Gar Wood Industries Inc., Detroit, was recently appointed a member of the board of

directors, to serve until 1940, and also placed on the executive committee of the Manufacturers' division, American Road Builders' association, Washington. Other men who constitute the executive committee are: William M. Parish, industrial sales executive, International Harvester Co., Chicago; H. N. Schramm, Schramm Inc., West Chester, Pa.; S. F. Beatty, president, Austin-Western Road Machinery Co., Aurora, Ill.; Paul L. Griffiths, vice president, Koppers Products Co., Pittsburgh, and Chauncey B. Smythe, vice president, Thew Shovel Co., Lorain, O.

♦

M. P. Ferguson, heretofore vice president, Eclipse Machine Co., Elmira, N. Y., has been named vice president and general manager, Bendix Products Corp., South Bend, Ind. Victor W. Kliesrath, former vice president in charge of engineering and general manager, Bendix

Robert H. Heyer

Metallurgist in the research laboratories, American Rolling Mill Co., Middletown, O., who has been awarded the Charles B. Dudley medal of the American Society for Testing Materials, as announced in STEEL, June 6, page 24

Products Corp., will go to New York to direct activities of a new marine development division of Bendix Aviation Corp., of which he is vice president and a director. John P. Mahoney, heretofore vice president of manufacturing, has been made vice president in charge of industrial relations, Bendix Products Corp.

♦

A. C. Howard, for the past six years assistant general manager of Fairbanks, Morse & Co.'s Beloit, Wis., plant, has been promoted to general manager. This position formerly was held by A. E. Ashcraft, in addition to his executive control of all Fairbanks-Morse factories in the United States and Canada.

Mr. Howard's association with the

A. J. Koetsier

Who has been appointed superintendent, Micarta division, Westinghouse Electric & Mfg. Co., Trafford, Pa., as noted in STEEL, June 6, page 25

company began 22 years ago when he was employed as an inspector at the Canadian Fairbanks-Morse Co. Ltd., Toronto factory. He subsequently served as general manager of other Fairbanks-Morse factories.

♦

Louis Poock, vice president and general manager, Sheffield Gage Corp., and the Cimatool Co., Dayton, O., has been elected chairman of the Dayton-Cincinnati section, Society of Automotive Engineers. Other officers elected include: vice chairman, Dayton division, Charles E. Dickerson, president, Miami-Dickerson Steel Co.; vice chairman, Columbus division, K. W. Stinson, professor of automotive engineering, Ohio State university; vice chairman, Cincinnati division, W. W. Tangeman, vice president, Cincinnati Milling Machine & Cincinnati Grinders Inc.; treasurer, E. S. Patch, engineering and sales manager, Moraine Products division, General Motors Corp., Dayton; secretary, William S. Wolfram, engineer, Inland Mfg. division of General Motors.

DIED:

■ ARTHUR P. VAN SCHAICK, 56, vice president and a director, American Chain & Cable Co. Inc., June 7, while traveling from New Orleans to Chicago on the Panama Limited. Following a month's vacation at Beaumont, Calif., he was enroute with Mrs. Van Schaick, to their home in Southport, Conn. He also was a director, Chain institute, and former president, American Hardware Manufacturers' association. He joined the American Chain company at Bridgeport, Conn., as manager of sales in 1919. Several years later he was elected a director, and three years ago was elected vice president in charge of sales of all divisions.

♦

Edwin E. Russell, vice president, J. I. Case Co., Racine, Wis., in Racine, June 6.

♦

Frank Foster Dodge, 53, chairman and former president, Atwood Machine Co., Stonington, Conn., in Westerly, R. I., June 13.

♦

Walter Bentley Pitts, 57, production manager, Pacific Wire Rope Co., Los Angeles, in Los Angeles, June 1.

♦

Stanton L. Dreifus, 51, head of the specialties department and long associated with Schiavone-Bonomo Corp., New York, in New York, June 11.

♦

Albert B. Weissenborn, 74, president and general manager, Appleton (Wis.) Wire Works, maker of screens for pulp and paper mills, June 3.

♦

Edward E. Roll, 60, treasurer and general manager, James H. Herron Co., Cleveland, in that city, June 14. Mr. Roll was co-founder and former president of Roll Mfg. Co., and at one time was manager of the engineering department, Cleveland Builders Supply Co.

♦

Benjamin F. Curtis, 69, traffic manager, Norton Co., Worcester, Mass., in Worcester, June 10. He joined the Norton Co. in 1887, two years after its founding, and retired in 1937. He was an ex-president and a charter member, New England Traffic Men's association. He also was a member, Worcester Traffic club, and New York Traffic Men's association.

♦

George E. Shaw, 77, a director and secretary, Crucible Steel Co. of America, New York, at his home in Pittsburgh, June 14. He also was senior partner in the law firm of Reed, Smith, Shaw & McClay, and a director of Pittsburgh & Lake Erie Railroad Co. For many years he was a trustee, Carnegie institute and Carnegie Institute of Technology.

♦

Theodore Ahrens, 79, chairman of the board, Standard Sanitary Mfg. Co., Pittsburgh, and a founder, American Radiator Co., in Louisville, Ky., June 12. Mr. Ahrens was the founder and first president of the Standard company which he headed for 30 years. He helped form the American Radiator & Standard Sanitary Mfg. Corp. in 1929, serving as president until he resigned in 1936.

Would End Pollution of Streams, Reclaim Waste

■ An intensive study of pollution of streams is being undertaken by the Mellon Institute of Industrial Research, in co-operation with the steel industry. The study is financed by the American Iron and Steel institute.

Prof. Willard W. Hodge, head of the department of engineering of West Virginia university, will supervise it, taking charge of the fellowship at Mellon institute during a year's leave of absence from the university. Studies and experiments by individual companies over several years will be co-ordinated.

Aside from providing means for ending stream pollution by wastes, an effort will be made to devise means for recovery of valuable chemicals now lost.

Sells More Induction Furnaces in Germany

■ Ajax Electrothermic Corp., Trenton, N. J., announces recent sales of large Ajax-Northrup high frequency induction furnaces in Germany as follows: Two 1520 kilowatt equipments, one to Krupp and the other to Eisen-u Huttenwerke, A.G., Bochum; two 1520 kilowatt and two 450 kilowatt equipments to four other German firms.

The 450 kilowatt equipments are capable of operating furnaces of any capacity up to 3 tons and the 1520 kilowatt generators operate furnaces of 4 to 8 tons capacity.

Totals of Ajax-Northrup furnaces rated at over 150 kilowatts in foreign countries are as follows: Austria, 2655 kilowatts; Belgium, 1050; Czechoslovakia, 800; Denmark, 150; England, 11,074; France, 6100; Germany, 25,670; Hungary, 360; Italy, 5520; Japan, 9900; Norway, 300; Poland, 1830; Russia, 3110; Scotland, 400; Spain, 180; Sweden, 3590.

Honor Founder at Steel Club of Baltimore Outing

■ More than 100 iron and steel executives attended the third annual outing of the Steel Club of Baltimore recently at Rodgers Forge Golf and Country club, Towson, Md. A number from Washington and Philadelphia were present.

Charles S. Duvall, Maryland Bolt & Nut Co., newly elected president, presided at the dinner, and presented Frank H. Carter, Maryland Drydock Co., a founder of the club two years ago and twice president, with a handsome plague "in recognition of the leadership and the high standard of ideals set by the first president."

Winner of the afternoon's golf tournament was Harry A. Rowbotham, Belmont Iron Works, Eddystone, Pa. A number of prizes were distributed at the dinner by J. B. Coster, Bethlehem Steel Co., chairman of the golf committee; H. R. Dorney, Jones & Laughlin Steel Corp., secretary and treasurer of the club; and Charles W. Test, Youngstown Sheet & Tube Co., a club director.

■ The basic manual rate for compensation insurance for scrap iron dealers in New York state will be reduced from $32.76 per $100 of payroll, to $26.79, July 1, according to Benjamin Schwartz, director general, Institute of Scrap Iron and Steel.

Activities of Steel Users, Makers

■ BANTAM Bearings Corp., South Bend, Ind., recently shipped two bearings for a gold-digging dredge to Manila, P. I. by airplane. Transportation costs totaled $2500. Production time which ordinarily would have been one month was cut to nine days. Possible loss should the dredge have broken down completely would have been $7500 daily.

♦

Curtiss-Wright Corp. is taking over the building at Paterson, N. J., formerly occupied by the Portable Machinery Co., for use for the Curtiss propeller division. The corporation has leased 60,000 square feet for a period of five years with an option to purchase. The Curtiss company will move its propeller division from Buffalo late in July and early August.

♦

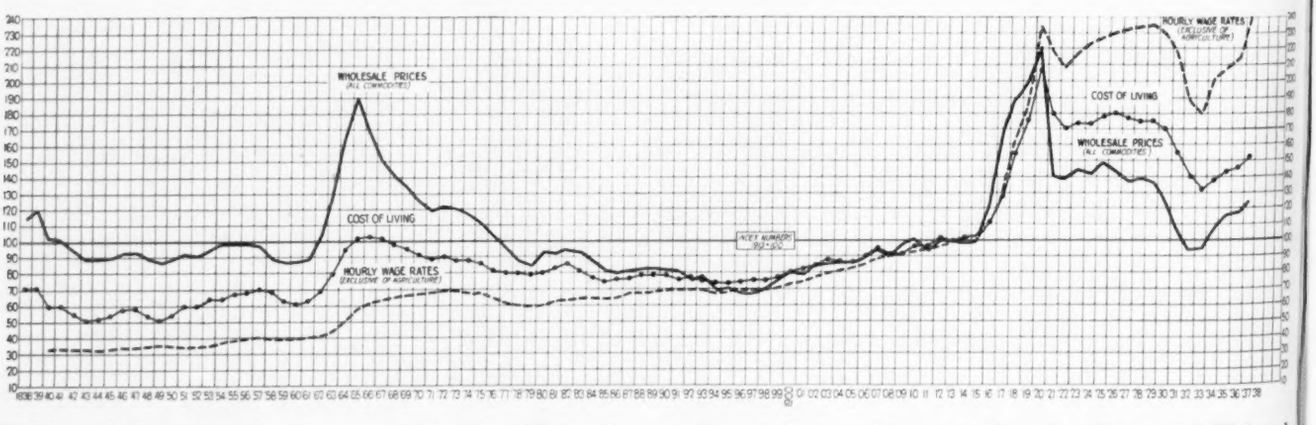
Christopher Mining Co., Morgantown, Pa., and the Pittsburgh & Fairmont Coal Co., Pittsburgh, last week opened Robinson Run No. 2 mine at Maidsville, Pa. The new mine will be among the ten largest producers in the United States and one of the first three in the tri-state area. It represents approximately $500,000 investment in modern coal mining and handling equipment.

♦

Ajax Steel & Forge Co., Detroit, has appointed the Machine & Tool Designing Co., Philadelphia, as representative in eastern Pennsylvania, eastern New York, New Jersey,

---

One Hundred Years of Economic Progress, 1838-1938



■ Adapted from a chart prepared by the National Industrial Conference board, New York. Sources: Wholesale prices of all commodities, and hourly wage rates, exclusive of agriculture, United States bureau of labor statistics. Wage rate data for 1936 and 1937 based on percentage change of hourly earnings in manufacturing. Note position of wage rates in relation to commodity prices in 1937—reversed from that in 1865

Delaware, Maryland and Washington.

♦

Key Co., East St. Louis, Ill., has installed a three-ton capacity Lectromelt furnace for the manufacture of high pressure and alloy steel fittings.

♦

Detroit Rex Products Co., Detroit, maker of degreasers, solvents, cleaners and strippers, has opened a new branch office at 111 Sutter building, San Francisco, in charge of W. A. Vensel.

♦

National Tool Co., Cleveland, has appointed the Ernest T. Gropler Co., 1060 Broad street, Newark, N. J., to represent its line of hobs, broaches and other cutting tools in New York state and northern New Jersey.

♦

Amercoat Sales Agency, Huntington Park, Calif., has been granted the exclusive sale of Amercoat products by American Concrete & Steel Pipe Co., South Gate, Calif. The new company was organized by Miles C. Smith, formerly sales manager, Amercoat division of the American Concrete company.

♦

Allegheny Steel Co. and Ludlum Steel Co. announce that effective immediately the Pacific coast business of both companies will be consolidated under the supervision of James H. Spade, 1417 Santa Fe avenue, Los Angeles. Complete warehouse stocks of the products of both companies will be handled. For the merger plans of these two companies see STEEL, June 13, p. 19.

MEETINGS

ENAMEL INSTITUTE PLANS CONVENTION AND FORUM

■ EIGHTH annual meeting of the Porcelain Enamel institute will be held in Cleveland, Oct. 25-26. The program being prepared will be of interest to manufacturers of sheet steel, chemicals used in enamel manufacture, and makers of enameled products. Architectural uses of porcelain enamel will assume a prominent place in the technical program.

The institute will conduct its third annual porcelain enamel forum at the University of Illinois, Urbana, Ill., Oct. 12-14. The forum will be devoted exclusively to problems of shop men in the industry and will feature a number of semitechnical papers by authorities in various fields dealing with shop problems. Sessions will feature open discussions.

WORK SIMPLIFICATION TO BE CONFERENCE TOPIC

A work simplification conference will be conducted at Lake Placid, N. Y., July 11 to Aug. 20, under auspices of the Lake Placid Club Education Foundation. In announcing the conference, Allan H. Mogensen stated that 2½ hours of each employe's day in American industry are wasted, representing an annual loss of $12,000,000,000.

"Figuring there are 40 million persons employed and they receive 40 cents an hour, the daily loss is $40,000,000," Mr. Mogensen said. "This waste is caused by lack of interest of employes in their work and lack of knowledge of their job, resulting in waste of time, energy and materials. An increase in efficiency would help materially toward maintaining wage scales and employment."

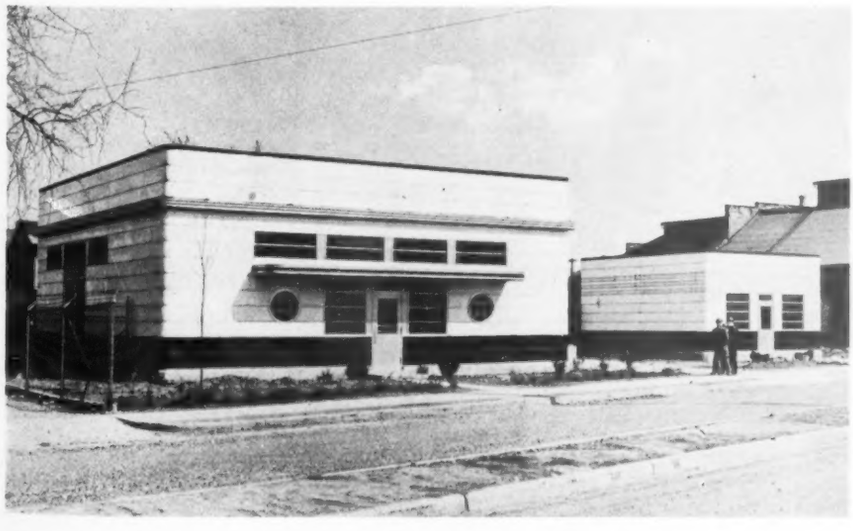
CHICAGO A.F.A. CHAPTER PLANS PURDUE CONFERENCE

First regional conference of the Chicago chapter, American Foundrymen's association, will be conducted at Purdue university, West Lafayette, Ind., Oct. 27-29, with the engineering school as a joint sponsor. The meeting is expected to appeal to foundry executives and engineers in Indiana and Illinois. Arrangements are being made by committees representing the chapter and the university. Four committees, representing the steel, gray iron, malleable and nonferrous branches of the foundry industry, are preparing the program.

BRITISH INSTITUTES TO VISIT AMERICA IN FALL

British Iron and Steel institute and British Institute of Metals have announced general details and itineraries of their joint autumn meeting in New York, Oct. 3-4, with the American Iron and Steel institute and American Institute of Mining and Metallurgical Engineers. One section will divide its time between Canada and the United States; another will spend most of its time in the New York area; and two others will extend their range to a number of cities as far west as Chicago. The schedule of the latter two groups takes in the National Metal congress and exposition in Detroit, Oct. 17-21.

Utility Company Adopts Frameless Steel Substation



■ Two frameless steel buildings house the Gas & Electric Service Co.'s new electrical substation, Middletown, O. Steel panels composing walls and roof are load-bearing and self-supporting. Exteriors are porcelain enamel, applied on No. 16 gage iron made by American Rolling Mill Co. Advantages of the buildings' design, worked out by Steel Buildings Inc. and utility company architects, are said to promise widespread acceptance by electric companies

Convention Calendar

June 20-22—American Society of Heating and Ventilating Engineers. Summer meeting at the Homestead, Hot Springs, Va. A. V. Hutchinson, 51 Madison avenue, New York, is secretary.

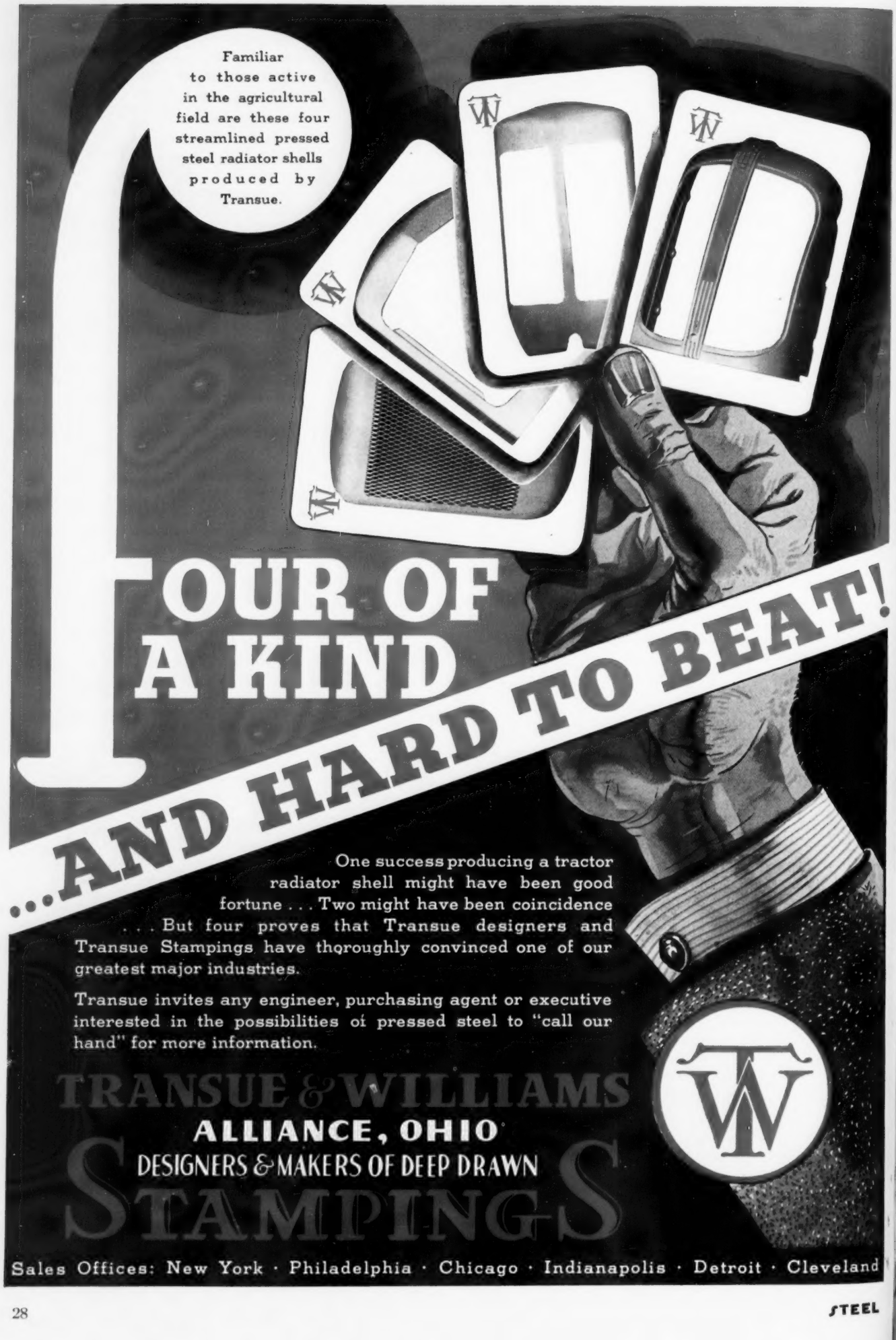
June 20-23—National Association of Cost Accountants. Nineteenth annual meeting at Palmer House, Chicago. Stuart C. McLeod, 385 Madison avenue, New York, is secretary.

June 20-24—American Society of Mechanical Engineers. Semiannual meeting at Statler hotel, St. Louis. C. E. Davies 29 West Thirty-ninth street, New York, is secretary.

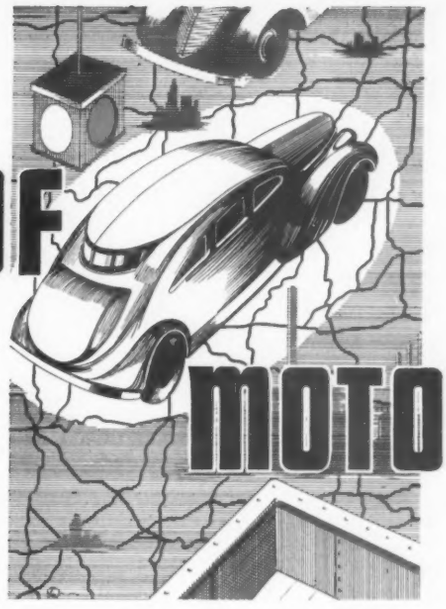
June 20-24—American Institute of Electrical Engineers. Summer meeting at Mayflower hotel, Washington. H. H. Henline, 33 West Thirty-ninth street, New York, is secretary.

June 27-30—American Society of Agricultural Engineers. Annual meeting at Asilomar hotel, Pacific Grove, Calif. Raymond Olney, St. Joseph, Mich., is secretary.

June 27-July 1—American Society for Testing Materials. Forty-first annual meeting at Chalfonte-Haddon hall, Atlantic City, N. J. C. L. Warwick, 260 South Broad street, Philadelphia, is secretary.


Familiar to those active in the agricultural field are these four streamlined pressed steel radiator shells produced by Transue.
FOUR OF A KIND
...AND HARD TO BEAT!
One success producing a tractor radiator shell might have been good fortune . . . Two might have been coincidence . . . But four proves that Transue designers and Transue Stampings have thoroughly convinced one of our greatest major industries.
Transue invites any engineer, purchasing agent or executive interested in the possibilities of pressed steel to "call our hand" for more information.
TRANSUE & WILLIAMS
ALLIANCE, OHIO
DESIGNERS & MAKERS OF DEEP DRAWN
STAMPINGS
Sales Offices: New York · Philadelphia · Chicago · Indianapolis · Detroit · Cleveland

MIRRORS OF MOTORDOM



DETROIT

■ PIECING together scattered odds and ends of news, it is possible to evolve a business picture which suggests to some observers the upturn is at hand without being generally appreciated.

For instances: A local scrap dealer discovered he made a profit in May for the first month of the year. Two local steelmakers have entered the scrap market in a small way in the past fortnight. Ford is reported ready to place a fair tonnage of steel sheets to round out certain depleted items. A steel producer is operating an electric melting furnace which a month ago was not slated to start until September. Automobile assemblies, while at low ebb, are holding on better than had been anticipated.

A local auto dealer professes to be "short" of good used cars, although not to the point where he is offering any fancy prices for trade-ins. Too many dealers have gone to the wall recently because of unwise trade-in allowances. But it is an ill wind which blows no good, and the weeding out of dealers operating close to the line has made things better for remaining dealers.

Suggests Slow Climb

From these few bullish developments it is not suggested that prosperity will be back by the Fourth of July, but the outlook definitely is clearing. Chances are good for a steady though slow climb in business for the balance of the year.

With 1938 about half elapsed, it is becoming more and more apparent that as far as automobile production is concerned, the pessimistic estimates heard last fall would be considered optimistic right now. In five months, assembly lines have turned out only about 1,117,000 cars and trucks. This month will add about 170,000 more. July, August and September will be low months,

BY A. H. ALLEN
Detroit Editor, STEEL

Material appearing in this department is fully protected by copyright, and its use in any form whatsoever without permission is prohibited.

possibly aggregating another 350,000. Thus by October 1, when new models begin to roll, output will have reached 1,637,000.

It is a certainty that there will be no pressure on new model production at the start, except to stock dealers. Assume the last quarter will account for another 750,000 cars, which is probably high, and the total for the year adds up to 2,387,000, well under half of the total for 1937.

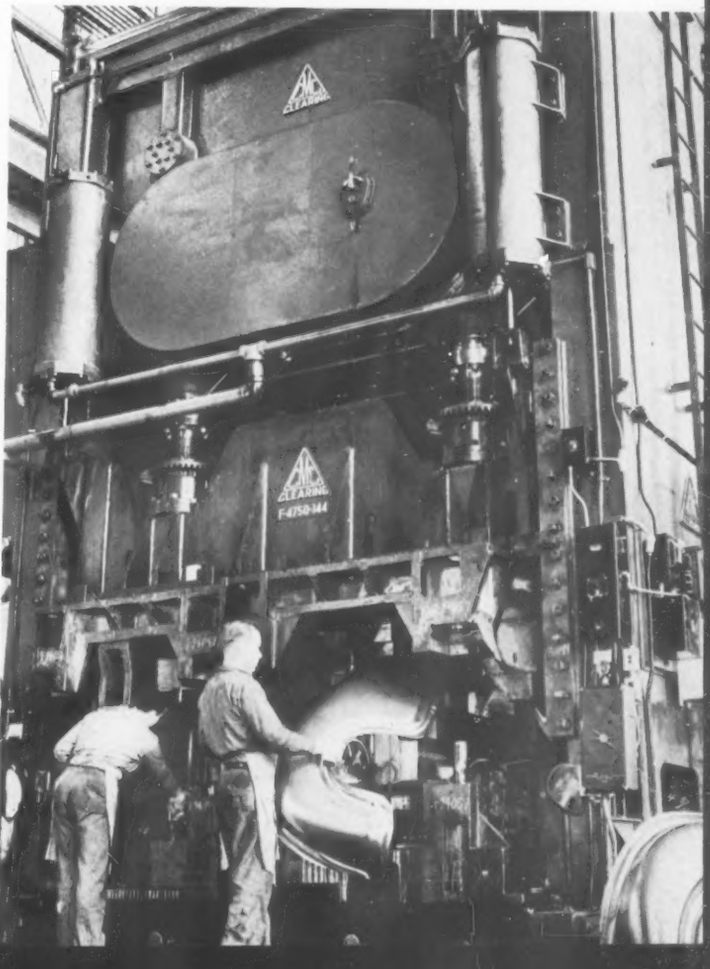
While it is still a little early to start guessing on production trends in 1939, nevertheless the inner sanctums of car builders must have some mark to base output on, and the chances are it is somewhere in the neighborhood of 2,500,000.

Much discussion is heard over whether retail prices on automobiles will be marked down next year. Considered opinion is that this will not be resorted to at first when new models are unveiled, but sufficient cushion will be provided by design and material specifications to allow a reduction if necessary.

As mentioned previously in these

Beam of Light Controls Press

■ **One of four new Clearing crankless 4-point eccentric presses in the Buick sheet metal department for flanging and trimming fenders. Press is of 650-ton capacity, measures 144 inches between uprights. Power is delivered to the slide through four eccentric gears combined with main bull gears in solid cast steel members. Frame is of welded steel construction. Starting and stopping of press is controlled through interruption of a light beam across front opening**



columns, designers and engineers throughout the industry are burning midnight oil trying to find ways and means to reduce costs of materials and parts. As far as parts are concerned, new production equipment often is the answer to lower costs. As far as material is concerned, sellers to the industry probably will encounter pressure for lower figures as they have in every year of depressed automotive production.

Unfortunately for steel suppliers there has been too much hue and cry over cutting steel prices emanating from sources which know little or nothing about steelmaking and the costs involved. Responsible steel executives have pointed out the virtual impossibility of lowering prices now when the industry is losing money, but the impression seems to have gotten around that steel prices are being held at artificially high levels and must come down. Look for the test during August when auto companies release orders for new models.

Returning for a moment to the current assembly picture, Chevrolet has issued releases on parts for 36,000 jobs in addition to those already scheduled, shipments to be made by July 1. Plymouth likewise has stepped up releases, which indicates assemblies for this month and July have been moved ahead. This was confirmed by a recent statement of K. T. Keller, president of Chrysler, in which he said the corporation's plants will remain open during most of July.

■ BITTER factional disputes within the ranks of the United Automobile Workers came close to blowing the organization asunder last week, after President Homer Martin discharged four vice presidents—Frankensteen, Mortimer, Wells and Hall—and George F. Addes, secretary-treasurer, all of whom he accused of disrupting union harmony through communistic influences. All property of those dismissed was thrown out of the UAW offices. Meanwhile union receipts dropped Tuesday from a normal $12,000 to $120, the UAW bank account of $100,000 was completely tied up, and John L. Lewis was trying desperately to heal the ever-widening breach between Martin and the opposing faction. It is understood Martin is none too well liked by the CIO chief, mainly because he let the automobile strike campaign get out of hand in 1937. But Martin can hardly be blamed for that, inasmuch as the initial outburst of UAW strikes was too hot a proposition for Martin himself to handle, and he had to string along as best he could, after radical leaders had started the conflagration.

Some are reading into the present mess of the UAW the gradual crackup of the organization. Undoubtedly it is true many thousands of members are completely disgusted with the upheaval, and it would not take much persuasion for them to wash their hands of the affair completely—especially those who have been paying their dues in the belief it constitutes one form of life insurance.

■ WITHIN the next six or eight weeks it is hoped to start construction of seven new buildings at the state fairgrounds here, a state-PWA WPA project for which an allotment of $3,750,000 has been made. The new buildings will include a 550 x 350-foot automobile building, a 612 x 188-foot horse barn, a $400,000 cattle barn, a $300,000 4-H club building, a $200,000 general exhibits building, a $175,000 women's building and an open-air theater costing $175,000.

May Take 3000 Tons Steel

The automobile building will cost $1,325,000, the horse barn $600,000, and if they are approved as steel buildings should require about 1500 tons of structurals. The five other buildings would take another 1500 tons if they adopt steel framework, as seems likely. No building designs have been made as yet, it is understood.

Another important building job on the verge of approval is a new plant for a Toledo, O., manufacturer, details of which are still being worked cut.

Thirty-two engineers received master degrees from the Chrysler Institute of Engineering last Tuesday at exercises held in Masonic Temple. In addition 132 other Chrysler employes received diplomas and certificates for completion of undergraduate work during the past few years. The institute was founded seven years ago, for the purpose of training future Chrysler executives, and since 1933, enrollment has totaled 2660. Graduate students this year were chosen from more than 3000 applicants from universities in this country and in Europe, while the undergraduate school at present has a waiting list of over 1000. Two of the undergraduates were presented four-year Walter P. Chrysler scholarships, giving them the privilege of attending any university that they may select.

A suggestion that a change be made in the yardstick of engine output to "torque at 1000 revolutions per minute" instead of horsepower at 4000 revolutions per minute has been made by a local automotive engineer.

He reasons that the average driver is more interested in torque at lower speeds, or acceleration, than he is in horsepower which reaches its peak at car speeds of 80 to 90 miles per hour. This engineer maintains that if torque were adopted as the unit of measurement of engine output, cars would be lower in price, lighter, more maneuverable and more economical on fuel and oil.

Exports Lower

Automobile exports in April reflected some drying up of markets abroad, dollar volume falling 12.2 per cent from March, a contraseasonal trend. Totals showed 15,564 cars and 9905 trucks shipped in April, compared with 16,658 cars and 13,688 trucks in March.

A new type of automobile brake in which each pressure member has two metal shoes, one bearing against the inside and one against the outside of the drum, is impressing some automotive engineers with its possibilities. The metal-to-metal contact is said to have less wear, no more noise than present types of brakes.

Next year will see more headlamps recessed into fenders, Chrysler for one having such a design going through.

Reliable estimates place field stocks of new cars at 350,000, with some sections of the country heavily overstocked. Sales departments are being hard pushed to equalize these stocks and to get them into customers' hands before new model time. Dealers in many sections are reported willing to chip a little off list prices in order to reduce their inventories.

Automobile Production

Passenger Cars and Trucks—United States and Canada

By Department of Commerce

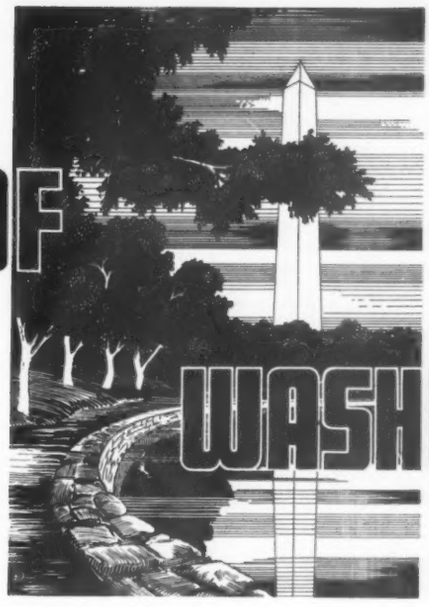
	1936	1937	1938
Jan.	377,244	399,186	227,744
Feb.	300,810	383,900	202,872
March	438,943	519,022	238,753
April	527,625	553,231	238,133
4 mos.	1,644,622	1,855,339	907,502
May	480,518	540,377	*210,000
June	469,368	521,153	.....
July	451,206	456,909	.....
Aug.	275,934	405,072	.....
Sept.	139,820	175,630	.....
Oct.	230,049	337,979	.....
Nov.	405,799	376,629	.....
Dec.	518,958	346,886	.....
Year	4,616,274	5,015,974	.....

*Estimated.

Week ended	
May 21	46,810
May 28	45,120
June 4	26,980
June 11	40,175

(Production figures for the week ended June 18 will be found on page 23.)

WINDOWS OF WASHINGTON



BY L. M. LAMM

Washington Editor, STEEL

WASHINGTON

■ THE administration, after having once been defeated in its effort for hours and wages legislation at last has been successful, after months of discussion.

The bill, as finally passed, will create a nationally-uniform minimum wage of 25 cents per hour for industries engaged in interstate commerce, effective 120 days after signing by the President. That wage-rate will apply for a year, after which a 30-cent minimum will be in effect for another year.

After that time, boards representing employers, employes and the public will be established to determine minima for individual industries. They will consider living, production and transportation costs and other factors.

Senator Ellender declared this provision will make possible differentials between the North and South. Senator Walsh, democrat, Massachusetts, on the other hand, contended geographical differentials were prevented by a clause saying "no minimum wage shall be fixed solely on a regional basis."

Many Exceptions Are Made

At the end of seven years, all minima will increase to 40 cents an hour, except where the boards decide employment might be curtailed considerably. All the factors considered in making the earlier exemptions again will be considered.

The practical effect of the wage provisions, one southern senator said, will be to make the original minimum set by a board for an industry virtually permanent, unless there was a marked change in operating costs and other factors affecting that business.

Enforcement of the maximum hour provisions, 44 hours a week the first year, 42 the second and 40 thereafter, was accomplished by ordering employers to pay their workers time and a half for all time over the maximum.

There are exemptions to the hour clause to take care of collective bargaining contracts, seasonal industries and those handling perishable food.

Broad exemptions from all terms of the bill are made for agricultural workers, and persons engaged in certain forms of processing farm products.

HIGHWAY PROGRAM CALLS FOR HEAVY STEEL TONNAGE

The bill providing for federal aid for highways for the fiscal years 1940 and 1941, commonly known as the Hayden-Cartwright bill, has been signed by the President and is now law.

The new law authorizes federal aid for highways for 1940 totaling $158,500,000 and for 1941, $191,000,000. For the fiscal years 1938 and 1939 the federal aid available is $238,000,000 for each year.

Experts of the American Road Builders' association, who are in close touch with these highway laws, have estimated that on highway construction for previous years for each $100,000,000 spent 107,000 tons of structural and reinforcing steel is used in roads and bridges.

These experts state also that the resulting indirect production is somewhat greater, amounting to 255,000 tons of iron and steel. This material is used for equipment, plant construction, and machinery used in their production. They estimate that the total amount of iron and steel used for each $100,000,000 spent for highway construction is 362,000 tons.

In making a rough estimate, they figure that for the primary roads for the fiscal year 1940, for which $135,000,000 will be available, that 488,700 tons of steel will be used; while for the fiscal year 1941, $160,000,000 will be available for the federal aid primary system and that 580,000 tons of steel will be needed.

Figured in another way, the experts of the association are of the opinion that for every $100,000,000 spent for roads $20,000,000 goes to the steel industry. Also they state that out of every $100,000,000 of highway expenditure, wages to the iron and steel industry amount roughly to $3,700,000.

Taking the 1940 fiscal authorization provided in the recently signed bill amounting to $158,500,000, it is said that $100,000,000 will go for the federal aid primary system. For the secondary or farm-to-market roads, $15,000,000 is provided and for the protection and elimination of railroad grade crossings, $20,000,000 is available. The remainder of the appropriation goes for forest roads, national park and parkway roads, Indian roads, and public land roads.

Funds for Road Repair

In the same law, an expenditure of $115,000,000 is provided for the fiscal year 1941 for primary roads, $15,000,000 for secondary roads, $30,000,000 for grade crossings, and the remainder to be divided up among forest roads, national park and parkway roads, Indian roads and public land roads. In addition to these amounts, an emergency fund is provided for in the new law of $8,000,000 for the repair of damaged highways.

These figures indicate that con-

gress has somewhat curtailed the federal aid highway appropriations for 1940 and 1941, but information received by the association from various state highway departments indicates that the highway program for those years will at least equal, and in some instances, exceed that of 1937.

The United States bureau of public roads has approved federal aid programs for the fiscal year 1939 in 27 states with an estimated cost of $142,000,000 of which $72,500,000 is from the federal funds. The secondary road programs of 25 states with a total estimated cost of $19,000,000 of which $9,500,000 is of federal funds, has also been approved. Grade crossing elimination projects which have been approved in 15 states have a total estimated cost of $13,000,000 of federal funds.

TEIGAN PUSHES HARD FOR FEDERAL STEEL OWNERSHIP

Representative Teigan, Minnesota, who introduced a bill, H. R. 10504, providing for acquisition of the iron and steel industry by the government (STEEL, June 13, p. 17), made an extended statement on the floor last week urging its passage. In the course of his remarks he said the government received $562,000,000 in revenue in 1902, while in the same year the receipts of the Steel corporation reached $560,000,000; in 1912, the government received $692,000,000 in revenue, while the Steel corporation that year received $745,000,000.

Also: "Invention has been sabotaged so that the basic steelmaking processes have not changed significantly since the Civil war. The dictatorship (in the steel industry) has put a brake on all industry, through its conspiracies against the consumers of steel."

He referred to efforts to unionize the industry during the past year, and added that the basic problem of steel cannot be solved short of government ownership. "It is foolish to talk of any other solution of this problem."

MAY ATTACK BASING POINT IN STEEL SELLING

While no responsible official will discuss the matter the rumor is again spreading around Washington that the procurement division of the treasury department is preparing to try its new bidding rules on the steel industry.

This division made a determined effort a few weeks ago to break down the basing point system in the cement industry, with little success.

The cement companies in the East have continued to refuse to bid on government business and this is said to be leading to serious consideration of buying the complete output of mills to fill government needs. At any rate, there is no way in which government officials could contend that their new rules have been a success in the cement industry. Washington representatives of steel companies who bid on government business feel that much less success could be attained by the government in the steel industry than in the cement industry.

WILL DISCUSS DIRECT LAKE-OCEAN SHIP SERVICE

Feasibility of direct American-flag steamship service between Great Lake ports and foreign countries will be discussed at the port hearings which the United States maritime commission has announced it will hold in Milwaukee July 26, 27 and 28. Methods of improving and facilitating ocean transshipments out of the central states via Atlantic, Gulf and Pacific ports also will be discussed.

This will conclude the series of hearings which the commission has been holding in various port cities in the past few months in connection with its studies of essential foreign trade routes and other phases of the program to develop the American merchant marine, with the object of determining how American-flag vessels can best serve the foreign commerce of the country as a whole and the ocean shipping requirements of these ports.

BRITISH TRADE PACT HINGES ON TARIFF RATES

There has been considerable talk in Washington during the past week that representatives of the British and American governments are not close together in negotiations on the proposed new trade agreement.

It is expected that sooner or later these negotiations will be successful, but it is stated the British contend American tariff rates are high, while theirs are low. Apparently all the British care to offer is to let their duties stand, while insisting that the United States should reduce rates.

LINER REPAIR CONTRACTS LET BY COMMISSION

Award of contracts for reconditioning three liners which will be operated in the new steamship service to the east coast of South America, which the United States maritime commission will inaugurate on or about Sept. 1, has been announced.

Bethlehem Shipbuilding Co., New York, with a bid of $685,000 for any two ships, was awarded the contract for the reconditioning of the VIRGINIA and the PENNSYLVANIA. The work will be done in the shipyards of the United Dry Dock Co., Brooklyn, N. Y., which the Bethlehem corporation recently acquired.

Newport News Shipbuilding & Dry Dock Co., Newport News, Va., with a bid of $307,000 for any one ship was awarded the contract for the CALIFORNIA.

Bids by the Robins Dry Dock Co., and Atlantic Basin & Iron Works, Brooklyn, N. Y., and those of the Newport News company for more than one vessel were rejected, Chairman Land said, because they did not comply with the bid invitation.

The VIRGINIA will be the first ship reconditioned by the Bethlehem Company. Work on this liner, as well as that on the CALIFORNIA, must be completed within 60 days. The Bethlehem company has 74 days in which to finish the work on the PENNSYLVANIA.

FEDERAL BUILDING PLANS ARE CLOSE TO SCHEDULE

Federal buildings numbering 221, representing an outlay of $61,000,000, are under construction or close to the ground-breaking stage, according to the June report to Secretary Morgenthau by Admiral C. J. Peoples, director of the procurement division.

Twenty-seven other projects representing an outlay of $3,572,000 are in the specification stage and are soon to be placed on the market; 88 others representing an expenditure of $20,800,000 are in the drawing stage and are expected to be placed on the market during the summer. These 336 projects are part of the building programs authorized by congress since 1933.

Of the 1968 projects authorized, beginning with the 1933 public works program, 1532 have been completed. The five building campaigns provided a total outlay of approximately $350,000,000. Of this sum $186,000,000 has been expended.

Of the 435 projects authorized under the act of August 25, 1937, a total of 402 projects have been allocated at an aggregate limit of cost of $65,333,400. While the seventy-fifth congress fixed this three-year program at $70,000,000, it also limited expenditures to one-third of the gross sum in any twelve-month period.

Under this limitation, the procurement division has completed four projects under the 1937 plans, has 26 buildings under contract and has asked for construction bids for three, and is writing specifications for 16 others, for an aggregate of $8,000,000.

Steel Is Not Doing its Public Relations Job!

■ THE PRINCIPAL speaker at the annual banquet of the American Iron and Steel institute on May 26, Gen. Hugh S. Johnson, revealed a surprising lack of information about basic facts in the steel industry.

Had he been familiar with the facts, he could not have advised a reduction in steel prices "even at a considerable sacrifice of profits." For the steel industry has no profits to sacrifice. It is in red ink.

As has been pointed out by STEEL, the industry paid 62 per cent more taxes in 1937 than in 1936. The wages it pays have advanced 31 per cent since October of 1936. In the meantime prices on finished steel products have advanced only 16 per cent.

These are the basic facts underlying steel prices. Had these facts been understood the principal address at the banquet would have been of a different character. There would have been no need for a defensive explanation by the spokesman of one large company losing $1,000,000 a month that it would be no solution to change "to a schedule of lower prices and increase our loss to $2,000,000 monthly."

Further Regimentation Is Threatened

The steel industry has only itself to blame for the unfavorable position it now occupies in public esteem. It has a story which will stand closest examination. Yet it fails to tell it effectively to the man in the street. As a result, it finds itself a constant target.

What is behind all the criticism of the steel industry and certain other industries? What is behind the accusations of monopoly, greed and oppression?

These questions may be answered more readily by recollecting what happened prior to the enactment of the Wagner act, the Walsh-Healey act, the securities and exchange act and other laws which industrial leaders hold largely responsible for the present depression.

There can be no doubt that the same sort of regimentation fastened on farmers is in process of formulation for industry.

Management in general will do well to expect the worst. It may expect an attempt in 1939 and 1940 to complete the destruction of our system of free enterprise.

It is only an aroused public opinion that can protect the system which has brought greater well-being and enjoyment of life to the average citizen than any other system the world ever knew.

It's Time for Steel To Tell Its Story

This system is worth preserving at all costs. And who is to lead the fight for its preservation if not its principal exponents?

In industry in general the steel industry is predominant. It is vitally concerned with the status of its customers, its customers' customers and their customers. It is vitally concerned over the resuscitation and maintenance of the system of free enterprise.

Isn't it time for the steel industry to tell its story more effectively to the public? Can it afford any longer to be amateurish in its public relations work?

On the manner in which the steel industry answers these questions will depend largely the conditions under which industry will function in the near future.

THE BUSINESS

Industrial Activity Recovers Part of Recent Losses

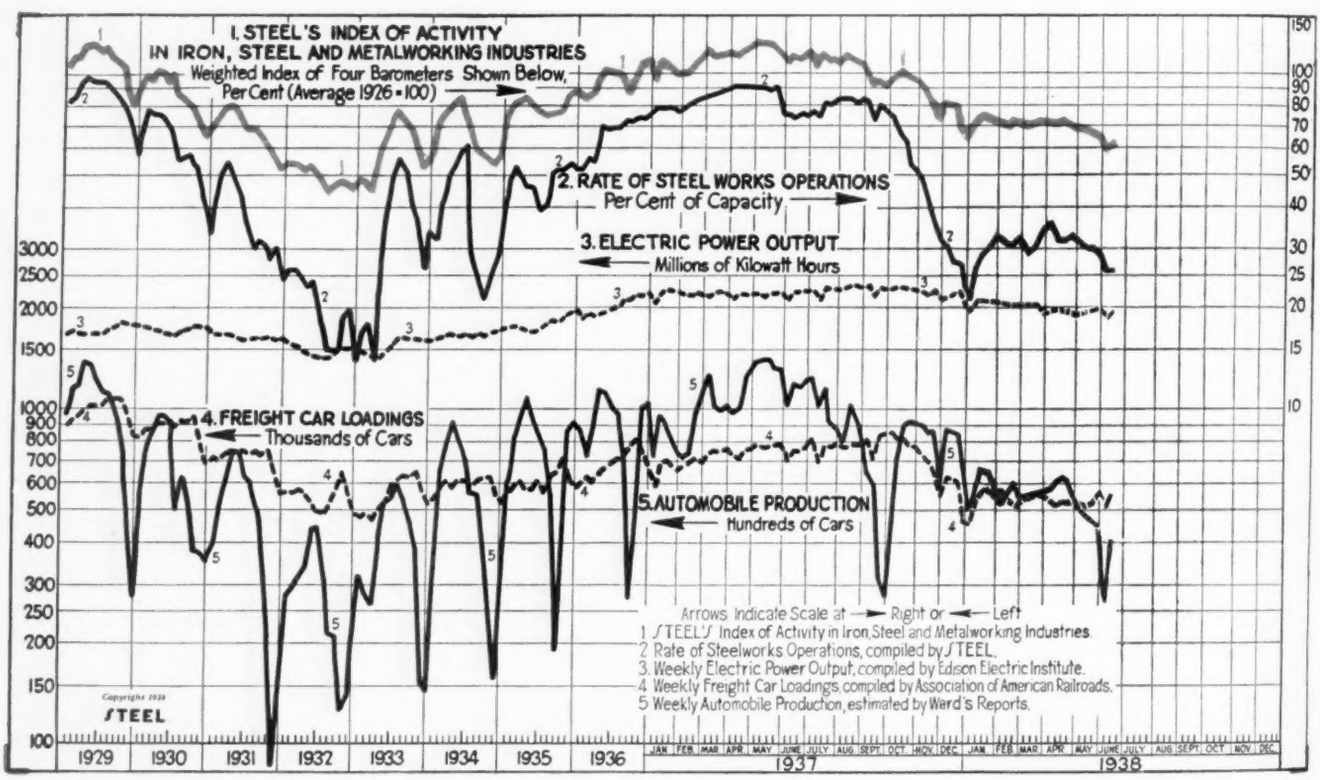
■ IN SPITE of many obstacles, industrial activity gained moderately in the week ended June 11. This condition was reflected in STEEL's index in the iron, steel and metalworking industries, which registered the first increase since the week ended May 7. The index regained more than half the loss it incurred during the week which included the Memorial day interruption. It now stands at 64.4 per cent, compared with 58.1 in the holiday week and 66.5 in the week ended May 28.

Contributing to this slight rebound in STEEL's index was a sharp advance in automobile production to 40,175 units, compared with 26,980 in the week ended June 4. The increase was attributed primarily to resumption of production at a number of Ford plants after a week's shut-down. However, the outlook for the remainder of the current model year is not encouraging at present.

Steelmaking operations failed to respond as anticipated in the week ended June 11. However, there are sound indications that the steel rate will register a slight gain for the week ended June 18.

Both revenue freight carloadings and electric power consumption registered substantial gains to more than compensate for losses incurred during the week ended June 4. Railroad freight traffic rose to approximately 555,000 cars, the highest since March 12. Power output eliminated all the ground lost since March 19 to closely approach the 2,000,000,000 kilowatt-hour level.

Activity, as measured by STEEL's index now is about 14 per cent below the peak this year of 74.7, recorded in the week ended Jan. 22.


1. STEEL'S INDEX OF ACTIVITY IN IRON, STEEL AND METALWORKING INDUSTRIES
Weighted Index of Four Barometers Shown Below, Per Cent (Average 1926 • 100)
2. RATE OF STEEL WORKS OPERATIONS
Per Cent of Capacity
3. ELECTRIC POWER OUTPUT
Millions of Kilowatt Hours
4. FREIGHT CAR LOADINGS
Thousands of Cars
5. AUTOMOBILE PRODUCTION
Hundreds of Cars
Arrows Indicate Scale at ► Right or ◄ Left
1 STEEL'S Index of Activity in Iron, Steel and Metalworking Industries.
2 Rate of Steelworks Operations, compiled by STEEL.
3 Weekly Electric Power Output, compiled by Edison Electric Institute.
4 Weekly Freight Car Loadings, compiled by Association of American Railroads.
5 Weekly Automobile Production, estimated by Ward's Reports.
Copyright 1938 STEEL
1929 1930 1931 1932 1933 1934 1935 1936 1937 1938

STEEL'S index of activity gained 6.3 points to 64.4 per cent in the week ended June 11:

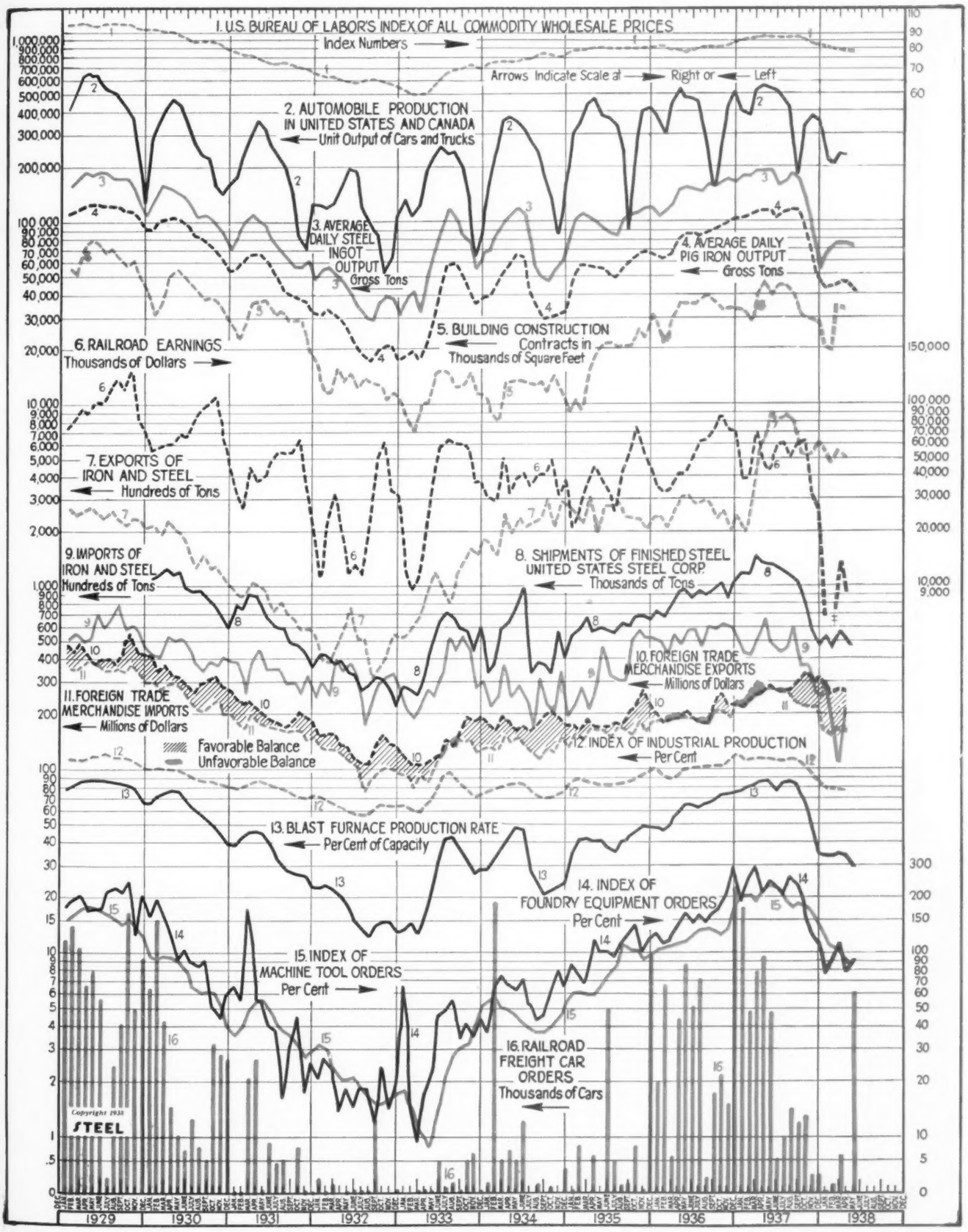
Week ending	STEEL'S Index of Activity Index No. 1938	1937	Steelworks Operating Rate Per Cent 1938	1937	Electric Power Output Million KWH 1938	1937	Freight Car Loadings 1938	1937	Weekly Auto Output 1938	1937
Mar. 12	70.8	112.7	30.0	87.0	2,014	2,212	356,664	748,993	57,438	101,684
Mar. 19	71.3	113.1	32.0	89.0	2,017	2,211	540,332	759,269	57,555	99,013
Mar. 26	72.4	114.0	35.0	90.0	1,975	2,200	572,952	761,109	56,800	101,046
Apr. 2	72.0	112.0	36.0	91.5	1,978	2,146	523,489	726,687	57,500	97,005
Apr. 9	71.3	112.8	32.0	91.5	1,990	2,176	521,978	716,044	60,975	99,196
Apr. 16	71.4	119.6	32.0	91.5	1,957	2,173	537,595	751,328	62,021	125,472
Apr. 23	70.8	122.0	32.5	91.5	1,951	2,188	523,767	761,182	60,563	133,164
Apr. 30	68.4	123.9	32.0	91.0	1,938	2,193	543,075	782,423	50,755	139,475
May 7	68.5	123.5	31.0	91.0	1,939	2,176	536,140	767,481	53,385	140,188
May 14	67.2	123.2	30.0	89.0	1,967	2,194	541,813	773,669	47,415	140,396
May 21	67.1	122.2	30.0	91.5	1,967	2,198	545,808	779,276	46,810	131,306
May 28	66.5	115.6	28.5	75.0	1,973	2,206	562,061	794,855	45,120	131,421
June 4	58.1†	105.1	25.5	75.0	1,878	2,131	502,624†	692,140	26,980	101,629
June 11	64.4*	111.4	25.5	74.0	1,991	2,214	554,394*	754,360	40,175	118,798

*Preliminary. †Revised.

STEEL TREND

Key:	April, 1938	Key:	April, 1938	Key:	April, 1938	Key:	April, 1938
1	78.0†	5	32,569,000	9	21,237	13	29.4†
2	238,133	6	9,236,818‡	10	274,482,000	14	90.6†
3	72,272†	7	489,202	11	159,907,000	15	88.0†
4	40,675†	8	465,081†	12	77.0	16	6,014†

†May. ‡Deficit of $2,136,481 in February not shown on chart.



Key: 1. U. S. Bureau of Labor's Index of all Commodity Wholesale Prices. 2. Automobile Production in United States and Canada, compiled by U. S. Department of Commerce. 3. Average Daily Steel Ingot Output, compiled by American Iron and Steel Institute. 4. Average Daily Pig Iron Output, compiled by STEEL. 5. Building Construction, Contract Awards in 37 States, compiled by F. W. Dodge Corp. 6. Railroad Earnings, Net Operating Income for Class I Roads, compiled by Bureau of Railroad Economics. 7 and 9. Iron and Steel Foreign Trade, reported by Bureau of Foreign and Domestic Commerce. 8. Shipments of Finished Steel, United States Steel Corp. 10 and 11. Foreign Trade, Value of Exports and Imports, reported by Bureau of Foreign and Domestic Commerce. 12. Index of Industrial Production (adjusted for seasonal variation; average 1923-25=100) computed by Federal Reserve Board. 13. Blast Furnace Production Rate, compiled by STEEL. 14. Index of Foundry Equipment Orders (Average 1922-24=100), compiled by American Foundry Equipment association. 15. Index of Machine Tool Orders (Three-month moving average; average monthly shipments 1926=100), compiled by National Machine Tool Builders association. 16. Railroad Freight Car Orders, compiled by STEEL.

Completes New Rod Mill

Delivering from last stand at more than 45 miles per hour, new unit will produce 20,000 gross tons of rod per month with closer tolerances and improved physical characteristics

By C. E. JOHNSON
Superintendent Rod and Wire Mill
Bethlehem Steel Co.
Sparrows Point, Md.

■ STARTING a new continuous combination rod and merchant mill at Bethlehem Steel Co.'s Sparrows Point, Md., plant completes an important step in the thirty-five million dollar expansion program in progress there for the last two years. This, with the new 56-inch hot strip mill, completely modernizes facilities of the Sparrows Point plant.

No. 5 rod, nearly a mile long, is delivered to reels in 60 seconds, emerging from the last stand at about 4000 feet per minute, nearly 46 miles per hour. Close tolerances, accuracy of contour and improved physical properties are directly attributable to this high speed, and to the Morgoil roll bearings mounted on tapered necks on all stands.

With the older 17-stand continuous No. 1 rod mill, the new, or No. 2 mill, will supply all rod from No. 5 up to ¾-inch diameter for local wire mills. Excess over local requirements will be marketed. New mill also rolls concrete-reinforcing bars in sizes from ⅜-inch round up to and including 1-inch square and also will produce merchant rounds and squares.

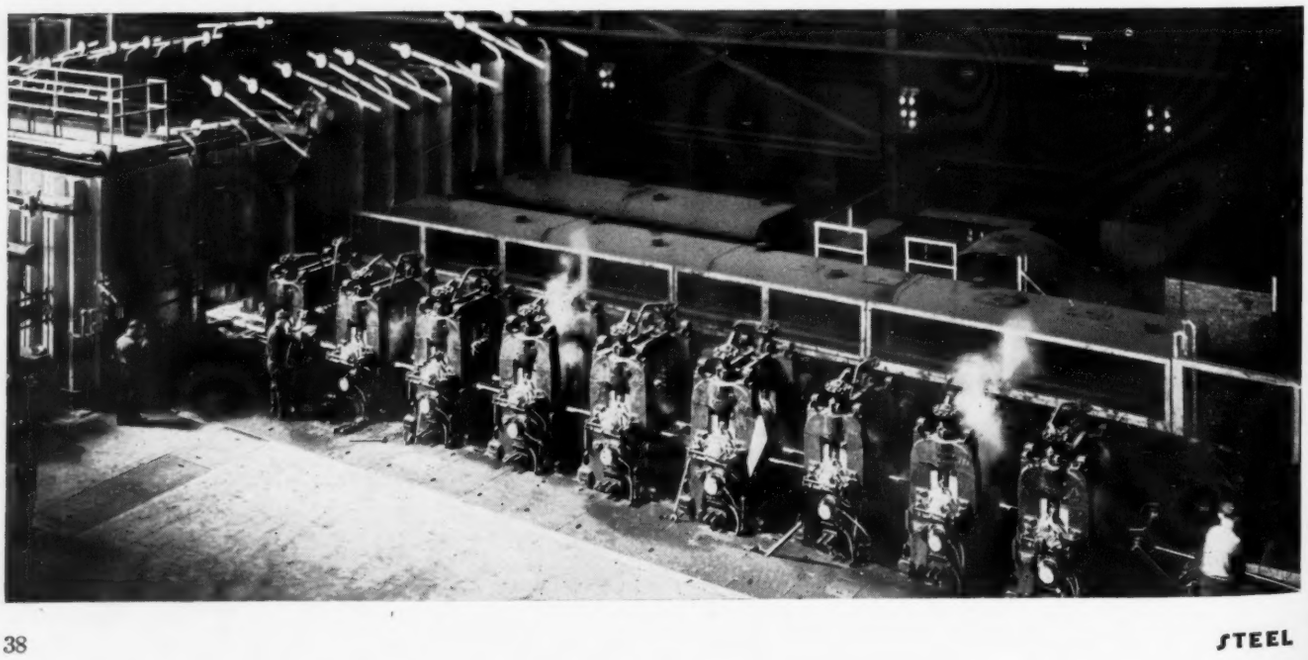
Rolls Four Strands

Although first 15 stands are designed to roll four strands of rod simultaneously, only one 2-strand finishing train has been installed. With addition of second finishing train, 4-strand production will make available an output of over 20,000 gross tons of rod per month. Present 2-strand capacity is about 12,000 gross tons per month.

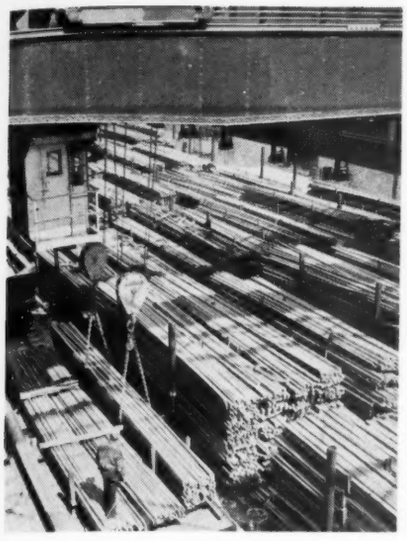
Billets are received in standard length of 30 feet and cross sections from 1⅛ to 3 inches square, varying from 335 to 918 pounds in weight. Billet yard, 100 x 475 feet in nineteen 25-foot bays, is served by 20-ton crane with 94-foot span. Over 12,000 tons, consisting of 40 or more grades, are stocked.

Billets in lifts of 10 to 15 tons are placed on a walking-beam platform and transferred by chain to a furnace charging conveyor, 105 feet long. Rollers 15 inches in diameter are driven through enclosed bevel gears with heavy cast iron plates between rollers. Pinch rolls place billets in heating furnace in front of an electrically-operated cross pusher.

Furnace is suspended-arch type with effective hearth area, 30 x 50 feet, and heating capacity of 50 gross tons per hour, more than sufficient for full 4-strand operation. It is steel enclosed, with insulating lining between case and brick work. Bunker C fuel oil or a mixture of coke oven gas and blast furnace gas,



Billet heating furnace and roughing stands



Scene in billet yard at Sparrows Point plant

of 500 B.t.u.'s is used. Gas burners, 13, spaced across the firing end 40 inches above hearth, or 12 oil burners extending 24 inches from face of inside front wall, are used to fire furnace.

Furnace control includes air-fuel ratio regulators, pyrometer measuring roof temperature, furnace pressure gage, flow meters for gas and oil, gages for air, oil, and gas pressures. Temperature of steel is shown by an indicating recording instrument connected to an optical pyrometer located between No. 4 and No. 5 roughing stands.

Furnace air is preheated to 600 degrees in a 2-pass recuperator with Carbofrax tubes. Temperatures of inlet and outlet flue gas, air at end of first pass and outlet air are recorded.

Switch Feeds Passes

A mechanical 4-way switch, actuated by steam cylinders and controlled by a single valve, guides entering billets into any one of the active passes in first pair of rolls. It maintains operation without intervals of inactivity in any of the passes when later 4-strand rolling is undertaken. A manually operated toggle shear for billets up to 3 inches square is on entering side of first roll stand.

Mill has 21 stands divided into nine roughing stands, four intermediate roughers, two looping stands, and six finishing stands. Accurate vertical, horizontal and longitudinal adjustment of rolls maintains accurate alignment of passes to obtain a high precision product.

Machined universal spindles instead of cast spindles and coupling boxes are used to save power, reduce noise and vibration and to keep mills in line. Mills have forged steel pinions with cut and case-hardened helical teeth.

First six roughing stands use rolls 16 x 36 inches; rolls in last three stands are 14 x 31½ inches. First two intermediate roughers have 12-inch diameter rolls, last two 13 inches; all four 27¾ inches long. Both looping stands have 11-inch rolls, 22¼ inches long. Rolls of the six finishing stands are 10 x 20 inches. First two passes are oval, followed by a round pass. Thereafter, passes are alternately oval and square up to last stand which is round. All rolls are equipped with duplicate passes across the face, varying in number according to size.

The two looping stands, each driven by a direct-connected adjustable speed motor, are connected together, to intermediate roughers and to finishing train by 4-strand repeaters.

A 12-inch steam-driven flying shear immediately after roughing train crops front end of rod leaving last roughing stand. Shear is arranged for 4-strand operation. A solenoid-operated snap shear is mounted on entering side of last looping stand to sever rod in event of a cobble in rod finishing train. Each knife of this multiple shear can be operated by a push button in operating pulpit and by auxiliary push buttons at reels and at rod finishing stands.

Maximum reduction in any pass does not exceed 35 per cent, minimum is 9 per cent. Roll speeds vary from 6 revolutions per minute in first roughing stand to 1500 revolutions at last pair of rolls. A billet passes through all stands in about 60 seconds. Due to high speed, temperature drop during rolling is low, and is never more than 300 degrees.

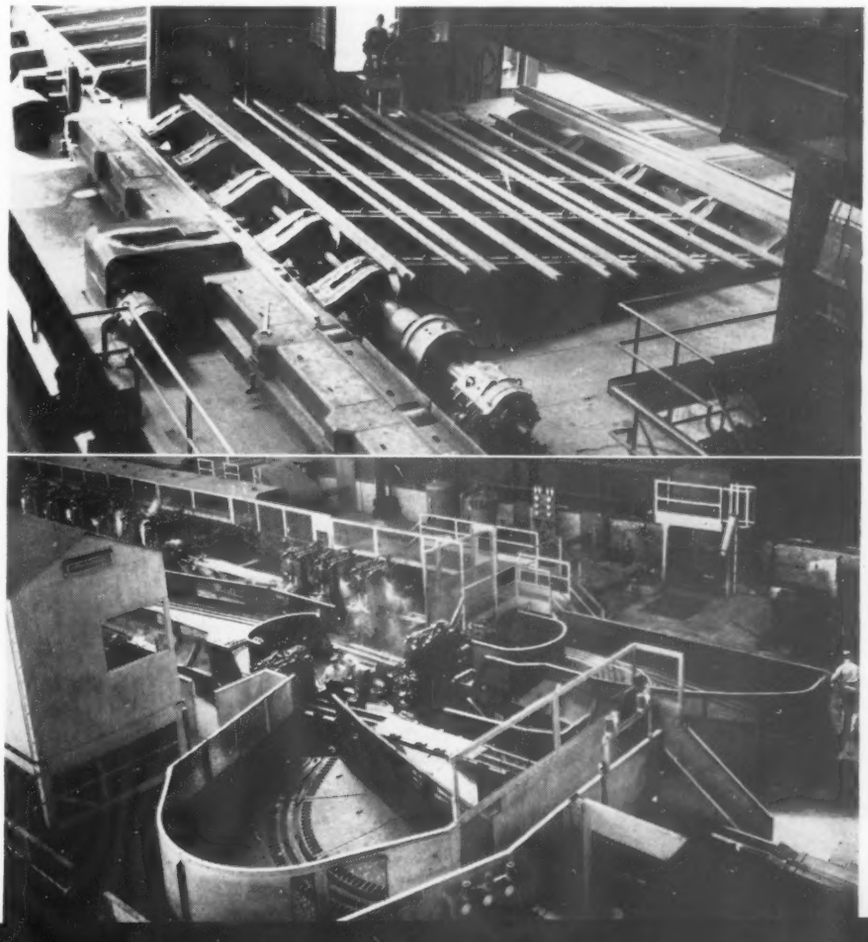
From finishing train, rod is delivered to four reels by water-cooled connecting pipes. Part of the scale is removed here, while spray nozzles control temperature of rod prior to coiling. Eliminators following spray nozzles remove surplus water from rod befre it reaches reels which are laying type.

Reels Synchronized

Reel head revolves at synchronized speed above a stationary coil plate and deposits the stream of hot rod between two rows of pins. Rolls and reels are synchronized by driving reels with an adjustable speed motor which receives its power from a generator connected directly to motor driving finishing mills. Coils formed are 46 inches outside and 34 inches inside. Coils are transferred horizontally by a motor-operated pusher to a continuously running conveyor. An automatic switching device directs rod from one reel to the next without delay between successive rod lengths.

Rod finishing mill is used for sizes up to ⅜-inch diameter. Rod of and above this size is finished in the fifteenth stand and delivered to two

(*Please turn to Page* 66)



Upper view shows chain conveyor handling billets to heating furnaces. Lower shows looping stands and repeaters

Platers Improve Quality Of Deposited Coatings

■ RECOGNIZING the increasingly exacting specifications which plated metal coatings are required to meet, the electroplating industry is bending every effort toward improving its products. This purpose was reflected in every technical session of the twenty-sixth annual convention of the American Electro-Platers' society at Hotel Schroeder, Milwaukee, June 13-16.

Papers and discussions were devoted to development of new and improved coatings, research on quality and corrosion resistance, control of processes, metal cleaning, and many other subjects dealing with the production and performance of deposited metals. Approximately 400 platers from the United States and Canada attended the convention. A summary of early sessions is presented herewith; an additional report will appear next week.

An exhibit of plated work and plating equipment and materials was held in connection with the meeting. Some 50 companies were represented with exhibits, and several branches of the society sponsored displays of plated articles.

In his presidential address at the opening session, President A. B. Wilson, Chevrolet division, General Motors Corp., Detroit, reported steady increase in membership, with 172 new members during the past year. He emphasized the importance of research work conducted during the year under direction of the national bureau of standards, Washington, also numerous investigations organized and pursued by members of several branches of the society.

Research Stimulates Co-operation

This local research work, Mr. Wilson pointed out, has resulted in improved co-operation between technical and practical men in the society. One of the chief research problems ahead is to determine what type of plating is best for various types of uses and exposures, he said.

President Wilson referred to the early apprehension of some members regarding the increased use of plastics and the probable effect upon the demand for plated ware. Actually, the decorative advantage of the combination of plated metal with plastics has added to the demand for plated products.

Exposure tests of plated deposits, now under way at the national bureau of standards, are to be continued with a wider range of thickness of deposition and methods of preparation of test specimens, including pickled cold-rolled steel. A suggestion was made that drawn steel also be included in the tests. Included in the work being pursued are development of a salt spray exposure test container and checking on the jet test, as developed in Europe.

Dr. William Blum, national bureau of standards, Washington, summarized researches being made at the bureau, and reported that the nondestructive magnetic tester, as originally developed for measuring the thickness of nickel on brass, can be used also for determining the thickness of nickel on steel. Preparation of standard safety and health regulations in plating rooms is to be included in work for the coming year.

Explains Current Distribution

An extremely valuable paper to the practical plater was presented by C. Kasper, national bureau of standards, who restated in language easily understood by the nontechnical man the scientific laws controlling primary current distribution in electrodeposition. Some of the points covered were effect of shape of an object plated upon current density, how this knowledge can be applied to design of plating racks, methods and equipment, and other problems encountered in shop practice.

As a branch activity, members of the Dayton, O., branch conducted a thorough survey of metal cleaning practice in ten local plants, the report on this work being presented by Charles Conley, finishing department, National Cash Register Co., Dayton, O. A wide range of methods and materials are utilized in the plants surveyed, employing from 100 to 6000 men. No effort has been made to standardize practice.

The survey proved highly beneficial to the co-operators, however, in providing detailed information as to their individual practices, and in revealing their requirements in the renewal of cleaning solutions. The results indicated that a common problem is the difficulty of determining when a solution should be renewed at the end of its life.

Bert Sage, plating superintendent, A. S. Campbell Co., Boston, traced the development of the plating industry from the days when control was guided merely by experiments and experience of men long in the business. When the demand arose for new metal coatings and higher quality, research and technical control were initiated and brought with them a new type of technician.

A practical demonstration of what takes place in a plating barrel was given by Burton G. Daw, vice president, La Salco Inc., St. Louis. He used a section of a plating barrel fitted at one end with plate glass and rotated it at various speeds with a motor and driving mechanism. By gradually increasing the amount of material to be plated, Mr. Daw demonstrated that dead spots occur when a barrel is over half full. He also showed how the shapes of various articles affect the tumbling. Effect of speeds on tumbling was demonstrated similarly.

Platers frequently neglect to consider that small parts, as compared with larger parts, have a greater amount of surface, occupy less space per pound, and require longer plating with the addition of more brightener or other materials. By determining the amount of such material required per ampere-hour, the plater can replace spent ingredients according to the meter reading, and thus can avoid repeated chemical tests, according to Mr. Daw.

Use of heavy nickel deposits in salvage work and for protection against corrosion has gained in popularity within the past few years, according to W. A. Wesley, metallurgist, International Nickel Co. Inc., Bayonne, N. J. Extra hard nickel deposits are harder than the commercial metal and have a fine grain size. Electrodeposition permits coating in irregular openings or on irregular surfaces, affords a method for rebuilding mismachined, worn or corroded parts, and provides a surface which will wear longer than the one originally supplied.

Coatings Are Spot Applied

In some salvage work, Mr. Wesley stated, ¼-inch thick coatings have been spot applied. Building nickel screens by electrodeposition provides a product said to have higher accuracy and the process practically without limitations in design and spacing of openings.

The process for bright nickel plating was developed by platers to meet the competition of stainless steel and lacquers, asserted Gustaf Soderberg, technical director, Udylite Co., Detroit. From a practical standpoint, bright nickel reduces or eliminates buffing, thus permitting bright finishing of odd-shaped articles with corners and recesses which it would be difficult or impossible to buff.

Research has shown the necessity of providing the proper thickness,

the speaker continued. Exposure tests have shown that satisfactory results are obtained, the greatest difficulty being encountered in connection with die castings, carbon steels, and in sharp bends on steel formed and drawn after plating.

Even though bright plating eliminates buffing costs, it is not economical when insufficient work is available to absorb the extra equipment costs. With the elimination of buffing, metal is not removed after it has been deposited; it is stated that the buffing loss in ordinary plating sometimes amounts to as much as 50 per cent of the original deposit.

Bright plating frequently permits work to remain on the racks throughout plating operations, thus reducing handling and transportation, minimizes floor space, and removes the hazard of scratching. Mr. Soderberg stated that poor original preparation of the metal, and oils and greases accumulating in the plating tank, are two common causes of trouble.

Selection of Anodes

Care in selection of nickel anodes is of greatest importance in obtaining correct anode action in bright nickel plating, it was emphasized in a paper prepared jointly by W. Pinner, chemist, and E. Borchardt, research director, respectively, General Spring Bumper Corp., Detroit. Nodulized deposits from loose particles from anodes cause the most trouble. The company with which the authors are connected does not accept anodes until they have been tested for percentage of loose particles deposited. This involves considerable work because different types of anodes are used for different work.

Blowholes, slag and piping in anodes are responsible for loose particles and these defects generally give poor plating results. The authors suggested that the anode manufacturer maintain as close control and inspection of his product as the user is required to maintain in his plated product.

During the past year, the New York branch of the society made an investigation on the use of addition agents in the bright zinc plating bath. Reporting on this investigation, Dr. C. B. F. Young, instructor in electrochemistry, Columbia university, New York, stated that experiments thus far indicate the advisability of further research.

Thorough understanding of effects of variations in the variable factors in plating baths and operation methods will permit the plater to answer most of the questions on copper plating which arise in shop practice, according to D. S. Hartshorn Jr., Westinghouse Electric & Mfg. Co., Springfield, Mass., who presented a symposium prepared co-operatively by members of the Springfield branch of the society. When results from various causes are known, the plater can effect the changes to meet requirements.

To understand the effect of metallic impurities on the structure of cyanide copper deposits requires an understanding of the structure of the plate. This was the assumption on which Dr. Walter R. Meyer, electrochemist, General Electric Co., Bridgeport, Conn., based extensive research on this subject. Numerous photomicrographs, tests and analyses demonstrated the effect of impurities in structure of the coating. The opinion was expressed that the metal impurity deposited is a salt of the metal. The only cure is prevention of contamination, or removal of the impurity.

Announcement of a new "white brass" coating with a composition of about 28 per cent copper and 72 per cent zinc, and development of the proper plating solutions and control, was announced by Floyd Oplinger, technical director, electroplating division, E. I. duPont de Nemours & Co., Niagara Falls, Ont.

The bath and process, which are covered by patents, produces a fine-grain coating which closely resembles chromium. Brighteners may be used in the bath. The finish receives no permanent discoloration from handling. It is suitable for decorative finish when not exposed outside; outdoor exposure results in a tarnish which may be washed off, however.

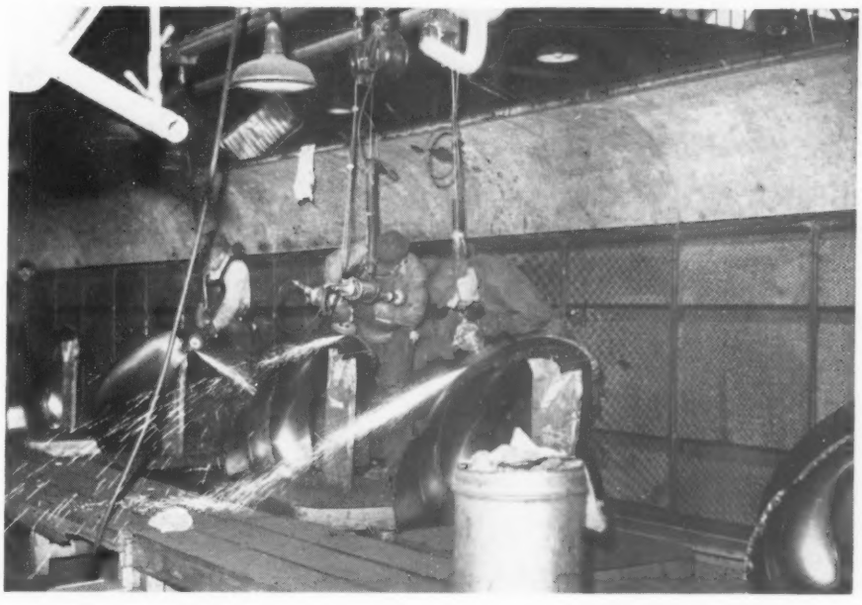
According to Mr. Oplinger, the bath is substantially of the zinc-cyanide type and is easily prepared and controlled. Plating is at high temperature with high current density without tendency to burn or pit. Recessed surfaces present no difficulty. Results on cast iron have not been entirely satisfactory; the coating must be applied on a smooth finish with nonporous base.

Studies Bath Composition

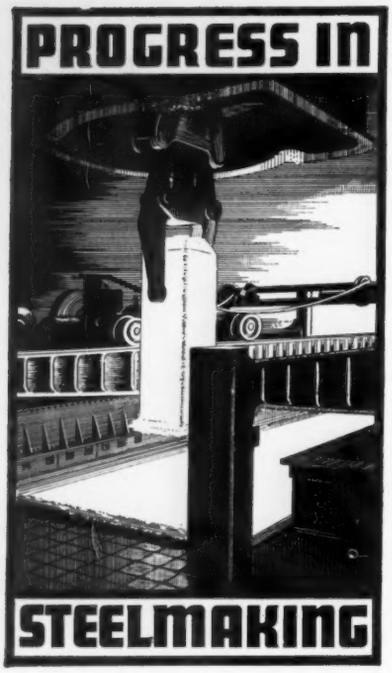
Robert Wagner, supervisor of plating, Guide Lamp division, General Motors Corp., Anderson, Ind., described his company's method for determining the proper Rochelle salt bath and most satisfactory operating condition, especially for plating die castings and steel parts. In these tests, variations were restricted to a single variable at a time, holding other factors constant.

After establishing the apparent best quantity of each ingredient, a new bath was prepared and operating conditions varied one at a time, holding others constant within shop limitations, the speaker asserted. After thousands of tests a new set of specifications for bath and operation were established.

Portable Grinders Speed Fender Finishing



■ **Metal finishers remove rough spots, press marks and welding seams from Pontiac fenders with light portable grinders suspended from overhead rails. Fenders, mounted on wood bucks or platforms, move along an oval-shaped track. Screen at rear is part of improved ventilating system which draws emery dust, grit and metal grindings from the air**



Wire Manufacture

Recent improvements in mill practice are resulting in a superior product with good surface finish and higher physical properties. Important progress made in pickling, baking and galvanizing technique

By H. C. BOYNTON
Metallurgist
John A. Roebling's Sons Co.,
Trenton, N. J.

■ IRON AND STEEL is the backbone of the nation. This being true, wire can be likened to the nerves which originate in, pass through, and radiate from the vital part of the country's anatomy. Without wire there would be no electricty, no transmission by telephone or telegraph, no radio, nor multitudinous other devises using wire too numerous to mention, with which our lives are closely associated.

How important economically is wire? Considering iron and steel round wire only, production in recent years has amounted to about 10 per cent of the total output of finished iron and steel in the United States. According to the American Iron and Steel institute, 1,369,233 gross tons of drawn wire was made in 1934. The figures rose to 1,944,479 tons in 1935 and to 2,401,195 tons in 1936. It is estimated that the 1937 total was in excess of 2,550,000 tons. Not included in these figures is a considerable amount of wire produced by a large number of small companies which do not report their tonnages to the institute. Manufacturers of sundry specialties in 1935 used some 15,200,000 pounds of steel wire for coat hangers alone, and other makers fabricated about 50,000,000 pounds of wire into screen wire cloth.

In STEEL, for Oct. 11, 1937, page 177, the writer briefly reviewed a few of the major developments in the steel wire industry during 1937. This treatment was merely an outline; the following is an attempt to amplify some of the newer practices worked out by progressive wire makers.

Wire manufacture is an ancient art, how old, few realize. In the Bible, book of Exodus, Chap. XXXIX, Verse 3, we find a description of the making of Aaron's sacred robe, this giving some idea of how the early wire was shaped to the form required. The time was about 1500 B.C. The verse reads: "And they did beat the gold into thin plates, and cut it into wires to work it in the blue and in the purple and in the scarlet and in the fine linen, with cunning work." Obviously, this early wire was "strip" or flat wire; round wire was never really made in worthwhile amounts until we find mention made of the "wire die."

Fig. 1—Stone with hole, which probably constituted a die used by primitive "wyer drawers." Courtesy Kenneth B. Lewis

Space does not permit a lengthy historical outline of the development of the wire drawing die which probably is the simplest of all metalworking tools. It is sufficient to say that the die employed today for making round wire is essentially the same as that of the 10th century, as described by Theophilus. The history of this most effective tool was recorded in an article published by Kenneth B. Lewis in 1923. Fig. 1, taken from this article, shows one of the early stone dies which, according to Mr. Lewis, was "probably used by very primitive wiredrawers." When we compare this die with a modern die, Fig. 2, we observe that the principle is identical. The die, of any material harder than the wire itself, is provided with a tapered round hole consisting of an "approach" and a "die angle" followed by a straight portion now called the "bearing."

Little Fundamental Change

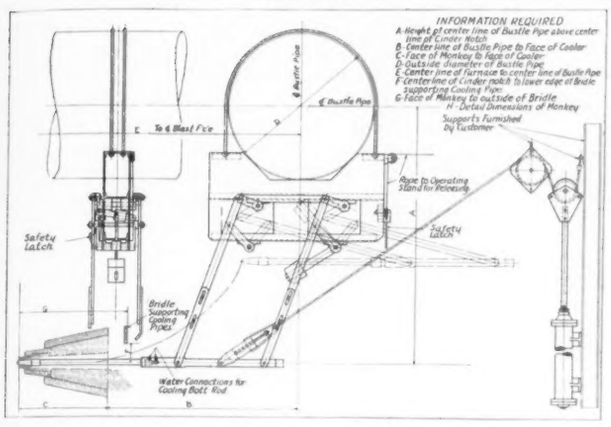
Other elements required in modern wire drawing are: 1. A means to pull the wire through the tapered hole (power); 2. a lubricant to prevent scraping of the surface during drawing; and 3. suitable apparatus for recoiling the reduced or drawn wire. Items 1 and 3 are combined in the modern power-driven wire or draw block.

All these factors were accomplished, crudely, of course, in 1400. Today, over 500 years later, all the elements of the wire drawing art are identical except for refinements. The hard materials composing the

The American • • •

SAFETY CINDER NOTCH STOPPER

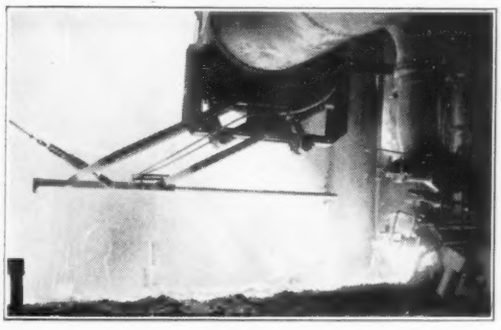
(Patented)


INFORMATION REQUIRED
A-Height of center line of Bustle Pipe above center line of Cinder Notch
B-Center line of Bustle Pipe to Face of Cooler
C-Face of Monkey to Face of Cooler
D-Outside diameter of Bustle Pipe
E-Center line of furnace to center line of Bustle Pipe
F-Center line of Cinder notch to lower edge of Bridle supporting Cooling Pipe
G-Face of Monkey to outside of Bridle
H-Detail Dimensions of Monkey
Supports Furnished By Customer
Pipe to Operating Stand for Reference
Safety Latch
Bridle Supporting Cooling Pipes
Water Connections for Cooling Bott. Rod

Designed to accommodate a cinder notch 6 feet 3 inches from the face of the Monkey to outside of Bridle supporting cooling pipes.

A rugged piece of equipment, easy and inexpensive to operate. Fifteen years on one furnace without missing a flush proves its dependability.

Many installations prove its efficiency.



View shows equipment in the "Out Position" during flushing of cinder. Note elevation of Botter Rod above cinder runner.

OPERATES EFFICIENTLY ON ANY CINDER NOTCH

1. Provides absolute safety to men in closing Cinder Notch at end of flushing period.

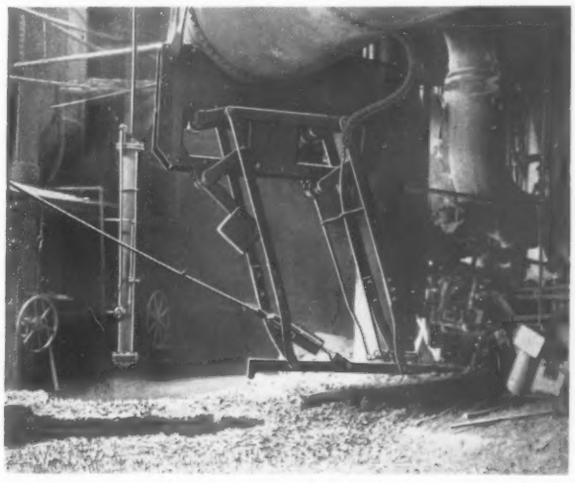
2. Equipment designed to accommodate any length of Cinder Notch, location of Penstock or height of Bustle Pipe.

3. Botter Rod is withdrawn from Cinder Notch to a high elevation above Cinder Trough.

4. Means provided for inserting Botter Rod assures its easy removal, and a jarring action for breaking Botter Rod loose from monkey is located where it is most effective.

5. Equipment will maintain its true alignment with the Cinder Notch at all times.

6. Equipment guaranteed to give entire satisfaction under any condition and will stand the test of the most critical blast furnace operator.



View of the Stopper in position after the Cinder Notch has been closed.

Eliminate the "Lost Time" Accidents occurring at the Cinder Notch

The safest stopper in an emergency is the one your men will appreciate and operate

WILLIAM M. BAILEY CO.

PITTSBURGH *ENGINEERS* PENNA. U.S.A.

dies now used may be diamond, rare metal carbides, high-chromium alloy steel, hardened carbon steel, or cast iron. Each material has its own particular field in the art.

Lubricants are of many types; they may be soaps, greases, oils, emulsions, hydroxides (sull coats), salts of copper and tin or both, phosphates, metal coatings, etc. Power is supplied through revolving blocks or drums which wind or coil up the smaller section as soon as it has been pulled through the tapered hole

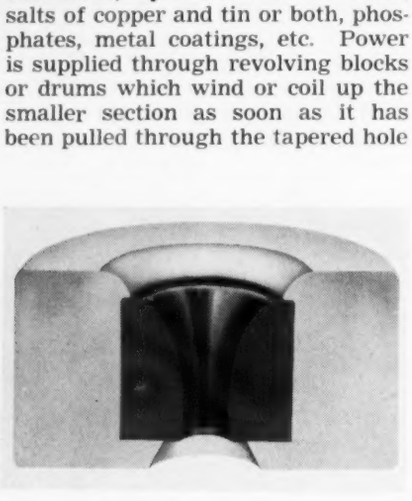


Fig. 2—This is a cross section of a modern carbide wire drawing die. Courtesy Carboloy Co., Detroit

in the die. Wire drawing is seemingly simple in theory, but actually it has its complications and is a highly specialized art. It is not a simple matter to draw music wire to a tensile strength of 300,000 to 400,000 pounds per square inch, or a valve spring wire which must have certain elastic properties and which when formed into springs will operate at temperatures from zero up to 1000 degrees Fahr. without breaking.

Our modern wiremakers realize first and foremost as probably did the 14th century "wyer drawers," that surface conditions determine the utility and quality of their product. The useful life of wire frequently is a direct function of the smoothness and freedom from surface defects throughout its length. Truth of this statement has been verified amply by many published reports upon fatigue of metals.

Wire used in any environment tending to eat, pit, nick, sliver, scratch, or otherwise chemically or mechanically damage its smooth surface, will fail rapidly (fatigue in scientific language). This is especially true if the wire is used in a damp or salt air atmosphere.

Seek Flawless Surface

Wire manufacturers are using every means at their command to produce wire with a smooth surface free from surface flaws. The steel mill, by controlling the kind and output of the gases during melting and by tapping, pouring and teeming at the correct temperatures is turning out higher quality steel. The blooming mill is regulating the atmosphere in soaking the ingots and descaling them before rolling, also watching closely the shape and manipulation of their passes. In the billet yard, surface defects of the billets are removed by chipping and grinding, or flame scarfing when necessary. Through careful reheating, the rod mill endeavors to eliminate fins, overfills, laps, guide scrapes, etc.

Preparatory to wire drawing, the rods are annealed or "patented" in furnaces in which temperatures and atmospheres are controlled closely to minimize scaling and consequent decarburization. Finally, in the drawing operations, utmost care is exercised in the selection of the drawing dies, drawing speeds and lubrication. Thus, it is evident that all departments of the steel plant and wire mill are working together to produce a smooth, seamless and flawless surface on the wire. Of course, this extreme care is costly, but it results in high quality wire which gives good service.

As a convincing example of this extreme care to obtain a superior surface, one manufacturer of an extremely high-grade wire product, in addition to following the practice just outlined, makes doubly sure he is eliminating hair-like seams and other surface defects completely by resorting to continuous grinding of all rods from end to end. By means of this extra grinding operation he is making his finished product both round and smooth in one operation, and in spite of the high cost entailed finds a ready market for all of the wire he can produce and is getting in return an extra high price for it. Fig. 3 illustrates good and bad surfaces on high carbon steel wire.

Fine versus coarse austenitic grain size steel, as determined by various methods, has received much attention from wire manufacturers, although only a few have stated their preferences. It seems fairly well established, however, that a coarse-grained steel can be wire drawn more and will yield a better product to be fabricated into high-grade rope used for hoisting and haulage, for which service bending stresses are the most important factor in the life of the rope. Wire which is to be hardened and tempered, but not patented, for certain purposes like oil tempered spring wire, seems to be somewhat more suited for its life's work if fabricated from a steel having a fine, rather than a coarse austenitic grain size.

Coatings Are Important

Protective coatings which preserve wire from rapid deterioration are receiving much attention. Coatings composed of a phosphate base, also lead, tin, copper, cadmium and zinc, are all forging to the front and deserve mention. However, zinc coating is gaining ground rapidly, probably because recent weathering and corrosion-fatigue tests have shown that the life of a zinc-coated wire or any other article depends wholly on the thickness of the pure zinc coat thereon. This conclusion has been substantiated by extensive tests made by wire manufacturers and others.

By hot galvanizing, using the double galvanizing practice, it is not commercially feasible to put much more than 0.5 to 1.0 ounce of zinc per square foot of surface on heavy wire, such as No. 6, and much less than these amounts on smaller gage wire. It is true that several patented hot-dip coatings are employed to give wire more than 1.0 ounce of zinc per square foot of surface. However, in the writer's opinion it is

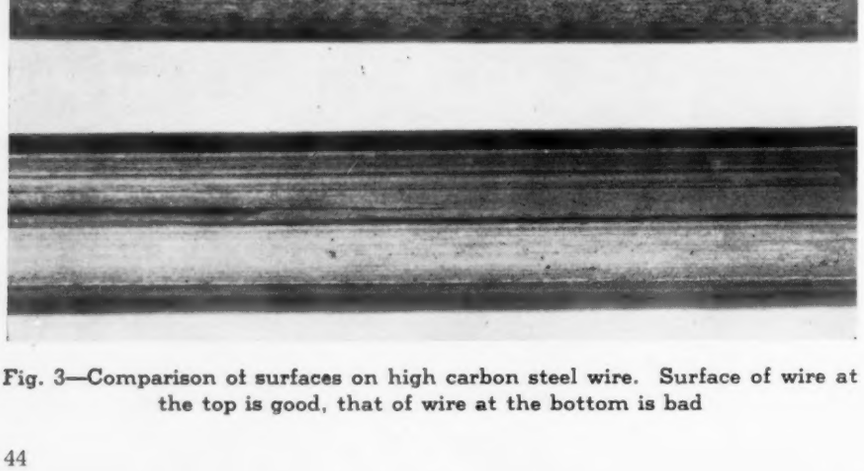


Fig. 3—Comparison of surfaces on high carbon steel wire. Surface of wire at the top is good, that of wire at the bottom is bad

extremely doubtful whether the extra amount of zinc and heavy zinc-iron alloy coating thereon is worth the additional price demanded. It has been proved many times by zinc manufacturers and consumers of galvanized products that about one-third or one-half of the total coating put on by the hot-dip method is iron-zinc alloy which is of relatively little protection against rusting.

By the electrogalvanizing process, however, it is possible to put 1 to 3 ounces of pure zinc per square foot of surface on the wire. As a result, several companies now are producing a heavily zinc-coated wire by the electric plating bath and are finding a ready market for their product which possesses superior rust resisting properties.

Gives Good Results

For small articles used in an atmosphere where corrosion is not too active and where price is not too great a factor, cadmium plating has given good results. Generally speaking, however, cadmium-coated wire when used in a moist, dirty, sulphur-bearing, carbon-dioxide laden atmosphere, does not hold its own with zinc when figured on a cost basis.

Stainless steel wire is growing in importance. Of the hundreds of varieties now made under numerous trade names, only two types deserve more than passing mention. The high chrome variety (12-20 per cent chromium) is useful under certain conditions where corrosion is mild. The so-called 18-8 (18 per cent chromium, 8 per cent nickel) now often extended to 20 per cent chromium, 12 per cent nickel, is making the greatest headway, particularly in the form of cord or stays, controls, and various other uses in airplane construction, where quality and life, not price, is a factor.

As to large sizes of stainless intended for wire used in hoisting rope under severe corrosive conditions, as well as stainless steel wire for screens, etc., the future is still somewhat doubtful, although demand is increasing. The price of 18-8 stainless steel wire is about five to six times that of the highest grade carbon plow steel, and although manufacturers find the demand for stainless steel rope to be increasing slowly, yet most makers are not recommending it as a running rope unless corrosive conditions are extreme. Even then recommendation is withheld unless length of service promises to be five to six times that of plain carbon steel.

The same statement is true for stainless steel cloth of the 18-8 grade, 16-mesh, insect cloth. Here again price of this material is about five to six times that of a plain steel cloth, depending, somewhat upon the type of finish on the latter—black, painted, zinc-coated, or otherwise protected. To date, the manufacturer has no positive information as to whether this additional cost is justified by the increase in life, especially at southern seashores where temperature is high and rain is plentiful the year around.

Recent tests within the past year have developed the fact that 18-8 stainless steel wire cloth has not been standing up to expectations in salt atmospheres in tropical locations, as for example, in Florida. With a 2-4 per cent molybdenum addition, this steel seems to be somewhat more corrosion resistant, particularly in salt air and in salt water, consequently this variety of stainless bids fair to replace the ordinary 18-8 for wire cloth.

What are the newest trends in the wire industry? A most interesting one has to do with the purchase of wire-drawing dies, particularly the medium-fine sizes and to a somewhat less extent to the fine sizes. The tendency is growing for the small wire manufacturer to use machine-made dies produced outside of his own plant. At least 20 to 30 companies are engaged in making and selling steel, carbide and diamond dies. Generally, it is more economical for the wiremaker to purchase these dies from a professional diemaker than to make them himself.

Recondition Own Dies

A majority of the larger wire manufacturers are reconditioning all their dies, that is to say, they are reboring and refinishing them themselves. This applies even to diamond dies. Several machines are available for doing this work accurately, quickly and economically.

The all-around wire drawer, who in the old days could hot punch his own plates or dies; harden, temper and grind his punches and all other tools (except possibly tools used for making and drawing complicated shaped wire); and who could also reset all his own holes when "run-out," is passing out of the picture. Few present-day wire drawers are experienced either in making dies or in reconditioning their worn or run-out dies. The practice is for the drawers to requisition needed dies from the die department and they are charged with these dies. When the dies need repairs, they are returned for credit.

Carbide Dies Popular

The almost universal use of carbide dies instead of the time honored cast iron and high carbon and alloy steel dies (generally high chrome) stands out as a remarkable achievement and illustrates the rapidity with which American manufacturers try out new products, and finding them good, scrap the old. It is true, of course, that many wire mills still are using the less expensive chilled cast iron dies for "ripping," particularly in soft steel wire drawing, but the up-to-date wire mill, with its cooled wire blocks or die holders or both, is turning more and more to the use of carbide dies. Long life, accurate dies are demanded when requirements call for large bundles of wire accurate to 0.001-inch for larger sizes and often 0.0001-inch for the finer sizes.

Another interesting and extremely important development is the shortening of the drying and baking period after wire has been pickled. In days gone by, some wire, generally high carbon material, was stored for days and weeks

(*Please turn to Page 72*)

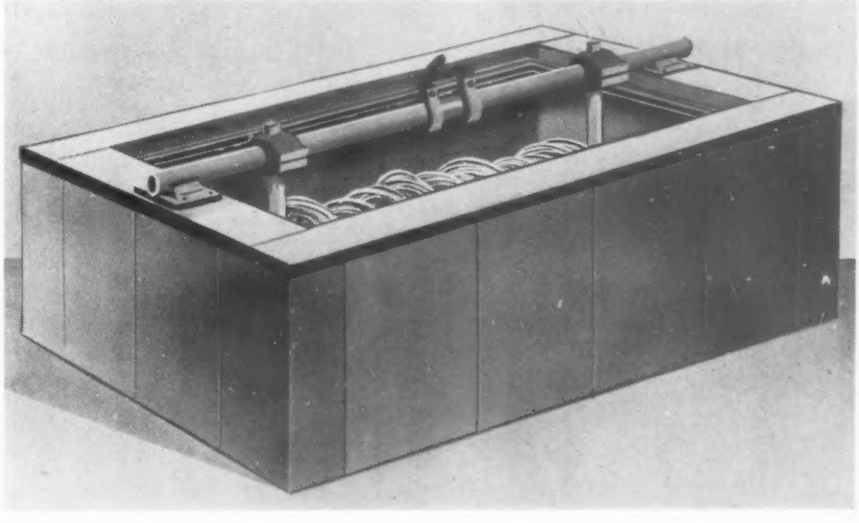
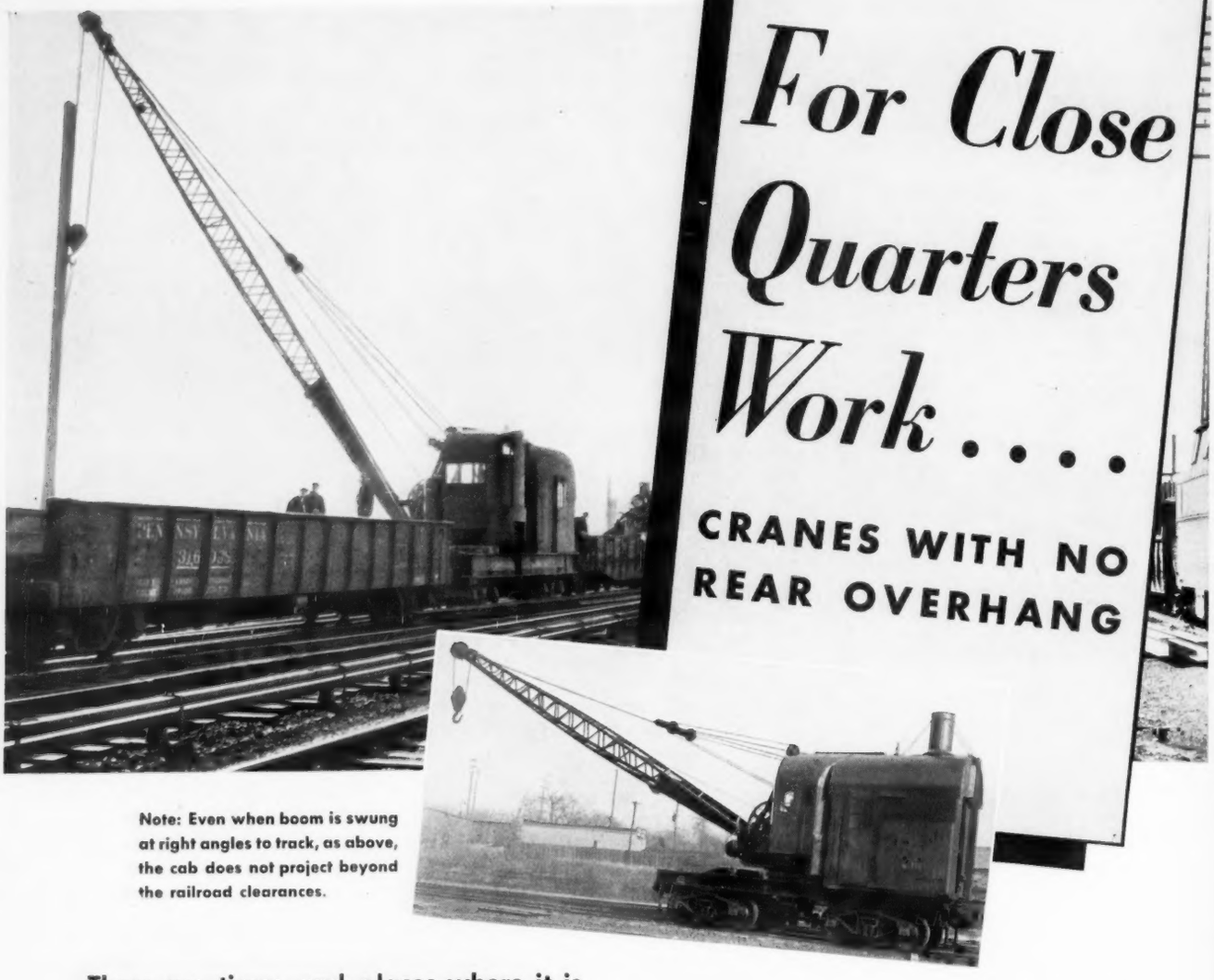


Fig. 4—Recently developed flash baker which dries and bakes wire very rapidly after pickling and liming. Courtesy Morrison Engineering Co. Inc., Cleveland



For Close Quarters Work....

CRANES WITH NO REAR OVERHANG

Note: Even when boom is swung at right angles to track, as above, the cab does not project beyond the railroad clearances.

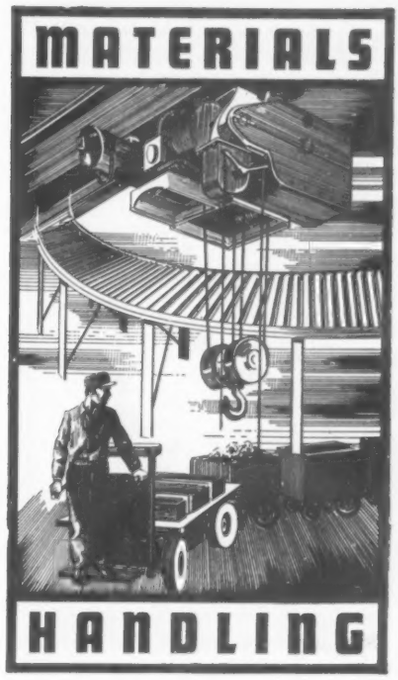
There are times and places where it is impossible to rotate a standard locomotive crane because of interference with a near-by building or traffic on an adjoining track. That is where these special Industrial Brownhoists fit in and do a real job.

The rotating superstructure of these Industrial Brownhoists has a radius of 5'-2", which allows the crane to swing within the railroad clearances. The boiler, water tank and coal bunker are housed in a separate cab located on the rear end of the truck frame and steam is carried to the rotating superstructure through an overhead swivel connection. This results in the machine having many of the characteristics of a derrick car, and does not sacrifice the boiler, water and fuel capacity of a standard steam locomotive crane when used for switching and bucket work.

A crane, to render profitable service, must fit the job. Building the world's most complete line of locomotive cranes enables us to recommend the right type and size for every kind of work. If you are not satisfied with your handling costs, let an Industrial Brownhoist sales engineer go over your layout. His diversified experience should provide you with suggestions and cost data worthy of your serious consideration.

INDUSTRIAL BROWNHOIST

GENERAL OFFICES: BAY CITY, MICHIGAN
DISTRICT OFFICES
New York, Philadelphia, Pittsburgh, Cleveland, Chicago,
Agents in Other Principal Cities



Location Is Asset

New branch warehouse finds central location and efficient layout are valuable in serving customers. Enclosed and heated storage racks prevent condensation on newly received stock

J. A. CRONIN, Materials Handling Editor

■ SEVERAL YEARS ago, Congdon & Carpenter Co., distributor of steel, metals and hardware, constructed a new warehouse at 405 Promenade Street, Providence, R. I. It literally was built around the materials handling system. The company's experience with this main plant led to the adoption of similar planning in a new branch warehouse recently erected at Fall River, Mass.

Facilitates Handling

Main objective was to facilitate rapid handling of steel, sheet metals and industrial supplies and to afford ample parking space for convenience of customers. Warehouse stands in an area of 37,758 square feet at corner of Bedford and Fourteenth streets, a strategic location from the standpoint of bringing goods into the building and shipping them out quickly. Since Bedford street is one of the main arteries running northeast and southwest in Fall River, a truck can be on well-traveled routes going in any direction a few minutes after leaving the warehouse.

New branch is a one-story brick and steel structure. Two main divisions running the length of the buiding, 210 feet, separate bar steel and sheet metal storage into one bay and hardware and industrial supplies into another. Southern bay, storing bar steel and sheet metals, has an overhead 2-ton electric traveling crane, floor-operated, running full length of building. Western end of this bay is sunk below floor level to facilitate loading and unloading trucks without additional elevating and lowering of shipments.

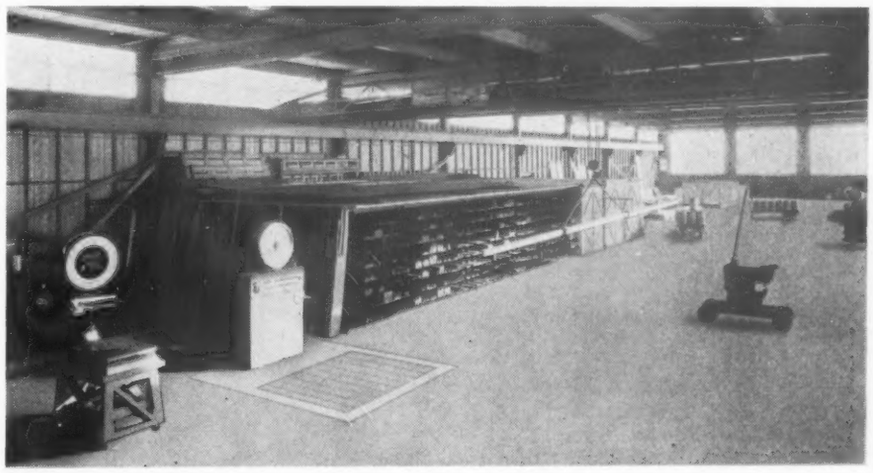
Storage has been simplified. A large steel rack holds a wide variety of lengths and sizes of bars at a convenient height for handling stock in and out. Part of one end is enclosed and heated. It is used for storing cold finished steel.

Two machines cut bars and sheets for current demands. An electrically-operated horizontal band saw is used to cut bars and a power gap squaring shear, with a nominal cutting length of 120 inches and a capacity for cutting 3/16-inch stock is used to trim and cut sheets. Demand for the work of these two machines is in excess of expectations, according to A. L. Philbrick, treasurer of the company.

Upper part of entire southern side of warehouse, seven feet above the floor, is of glass. This lets in a flood of daylight, maintaining the bay at suitable temperatures even on cold days.

More Items Available

According to Mr. Philbrick, "this warehouse was designed and erected for the convenience of the trade in the heavily industrialized cities of Fall River and New Bedford and adjacent towns, and also communities such as Falmouth and Hyannis on Cape. Cod. During the few months it has been in operation, it has justified its existence by a greatly increasing number of items available for quick delivery, a factor largely due to greatly improved



Southern bay of Congdon & Carpenter Co. branch warehouse, Fall River, Mass. One end of steel storage rack is enclosed and heated to warm finished steel received in cold weather

methods for handling materials ordered for immediate shipment."

Tiering Kegs of Nails on Pallets

■ IN RECENT years many notable improvements have been made in "below the hook" accessories for providing additional utility in crane and hoist service.

Generally, these developments have been in the direction of permitting pick up and delivery of larger unit loads, with control entirely in the hands of the crane or hoist operator. Special grabs are now common for use in handling a wide variety of steel products, and while most of these are designed for special purpose duty, some are proving useful for several widely diversified tasks.

Already in Operation

One such accessory has been in operation for several months in the San Francisco warehouse of a large steel company, where it has been proving almost indispensable. It is a suspended-seat, hoist carrier for use in handling various items of stock, principally kegs, drums and other units which may be stacked neatly on pallets. The advantage is that one man handles the entire operation in storage, and is always in control of the movements, while at the same time riding comfortably in a well-cushioned seat a safe distance away from the load.

Location of the cab permits the operator to high tier pallets and to place the latter with precision but without danger. The placing of each tier is supervised closely, and there is no delay in waiting for another operator on the floor to attach a hook, nor is there any need of assistance for unhooking on the top of the pile. In this particular warehouse, kegs of nails, bolts and other such products are lifted on pallets, each lift being capable of handling and piling 32 kegs of 100 pounds each.

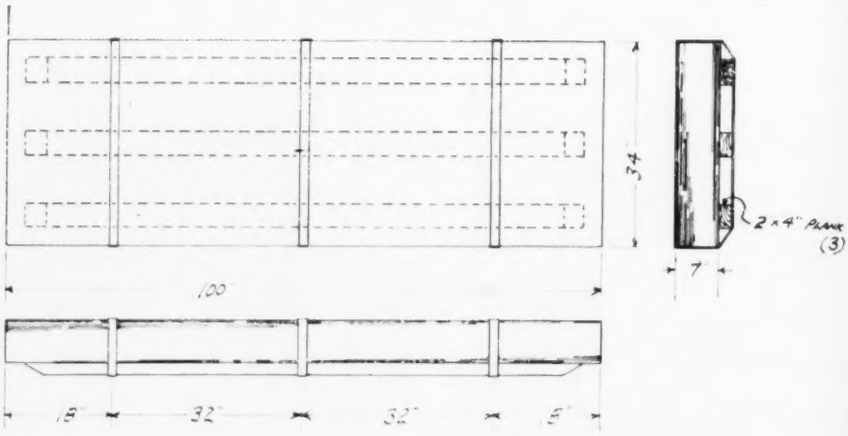


Fig. 1—Copy of specification sheet sent to suppliers of sheet steel showing how material is to be bundled by this method

Pack Reduces Sheet Damage

■ LIKE MANY other users of sheet steel, Ohio Electric Mfg. Co., 5906 Maurice avenue, Cleveland, has deliveries made in bundles which are unloaded and handled by means of an electric hoist on a monorail. For years chains were used with a certain amount of damage to a number of sheets. To unload a shipment of 20 tons required the labor of 3 men for 1½ to 2 hours, 4½ to 6 man hours.

Some time ago the method of packing shown in Fig. 1 was adopted which improved the situation somewhat as it kept the bundles flat and made it easier to attach the clamps for lifting. A copy of this drawing is sent with each order.

As detailed in the drawing, sheet is stacked on top of three 2 x 4 timbers, laid flat to form skids. When tied together by heavy steel straps, a bundle is formed which not only protects the sheets but also

(*Please turn to Page* 71)

Fig. 2—Further economies are effected by use of electric magnet to load sheet packs as steel strapping securely holds sheets together

Pamphlets Issued on Track Materials, Wheels

■ Definitions and descriptions of railroad track materials and wrought iron and steel wheels are set forth in two pamphlets issued recently by the American Iron & Steel institute. The pamphlets comprise sections 19 and 20, respectively, of a projected steel products manual.

The pamphlet on track materials contains a chart depicting chronological developments of the rail. It also defines T-rails, joint bars, tie plates, track bolts and track spikes, and illustrates standard types of each.

In the other pamphlet the manufacture of wrought wheels is briefly described, with technical terms relating to their heat treatment and machine finishing duly defined.

Previously issued sections are I, covering pig iron and ferroalloys and II, dealing with semifinished products.

Reprinted by permission D. D. Berckheimer, 50 E. 41st St., N. Y. City.

Nuts For Welding

Nuts and bolts for resistance welding have projections formed integral permiting secure welds at low current values. Wide variety of types for special uses

■ DEMAND FOR speed in assembly operations and for the assurance that various assembled parts will stay in place for reasonable periods have resulted in many designs of bolts and nuts for use with welding. Some years ago considerable time was spent in assembly operations where it was necessary to hold nuts while bolts were inserted or to hold bolts in place while nuts were threaded on them. Further, such assemblies were not always lasting.

These difficulties were overcome in a great measure by the general adoption of electric resistance welding. Nuts can be welded in place permanently on sheet-metal parts so no difficulty is experienced in setting up screws. Also bolts often are welded in place for the same reason. While the welding method overcomes assembly difficulties, it usually requires an excess amount of current with ordinary types of nuts.

Now special bolts and nuts made by Ohio Nut & Bolt Co., Berea, O., provided with welding projections, or lugs, are used to facilitate welding. A small amount of current produces a strong weld. This company holds patents on the nuts and the process of making them. Fig. 1 illustrates several varieties. At the extreme left is a ⅜-inch flat-head bolt with three welding projections on the bolt head enabling it to be fastened permanently in place without the necessity of drilling a hole to accommodate it.

The next unit is a 10/32 screw of same design. The third is a ½-inch bolt of somewhat special design. It is headed up and threaded in the usual way after which it is plated with tin. Then a screw machine operation follows wherein the head is turned to leave an oval projection at the center. It is necessary to perform this operation after the part is plated as the tin plate must be removed at points where welding takes place.

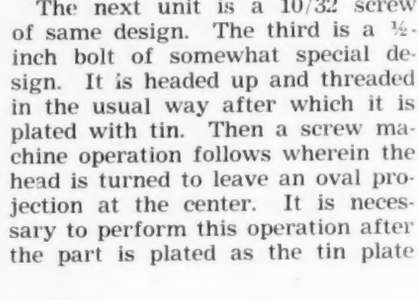


Fig. 2—Untapped welding nuts provide bearings for shafts as shown

The next unit is a ¼-inch flat-head screw of the same general design as the second unit. Adjoining this is a ½-inch square nut, the lower surface of which is provided with four welding projections, one at each corner. Next is shown an interesting form wherein the three welding projections are positioned about the tapered head at the under side. The last unit shows a flat-head bolt with welding lugs on the under side. The nut in position on the bolt is the same as the one previously described, although of smaller size, ⅜-inch.

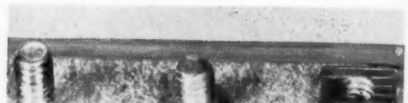


Fig. 3—Two types of welding bolts and a nut are shown here as they appear in use

These items are used extensively in a number of assembly operations on such products as gas meters, washing machines, stoves, refrigerators, automobiles, radios and on a large number of other assemblies where it is necessary to use bolts and nuts. The use of these special bolts and nuts often eliminate costly designs in places where special forgings or castings are usually required. For example, a flat piece of cold-rolled steel with two or more bolts welded in place may be substituted for a forging or casting. It also is possible to weld blank nuts in place to provide bearings of the through type or collar

Fig. 1—Various types of bolts and nuts especially designed for use with projection welding method of application

type when necessary. Examples of this construction are shown in Fig. 2.

Referring to Fig. 3, the unit at the left is a bolt which is welded in place on the back side; that is, the welding projections are on the under side of the head. In the center is shown a bolt welded in place without the necessity of drilling a hole to accommodate it. On the right is a nut welded in place.

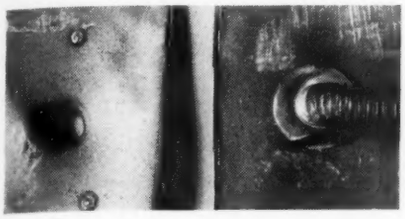


Fig. 4—On test, metal tore out before bolt loosened as shown at left. Bolt at right indicates severe deformation that welded bolt withstands without breaking

Fig. 4 shows results of tests where the welded bolt was subjected to a bending strain to ascertain the holding power of the welded joint. The bolt as it appeared after the test is shown at the right. Piece at left is 16-gage sheet metal after a test similar to the one at the right. In this instance metal under the bolt head was pulled away entirely without breaking the weld. All these special nuts and bolts are fastened in place on standard resistance welders using alloy tipped electrodes.

Welding Increases In Petroleum Industry

■ Typical of the rapid strides made by welding in recent years is its expansion from a limited field of minor assemblies to the position of an essential fabricating method in the petroleum industry. Starting to use welded cracking stills in 1925, the petroleum industry installed about 1500 welded pressure vessels in the following 5-year period with an estimated 7000 more in the next 5-year period. Effecting an increase of about 50 per cent in proportion of gasoline recovered from crude oil, it is estimated that filling the 1936 demand for gasoline with 1925 refining equipment would have required an additional supply of a billion barrels of crude oil. This alone is estimated to have saved 5 cents per gallon in the retail price of gasoline.

A further advantage made possible by use of increased pressures and temperatures is production of better gasoline. As to eventual exhaustion of petroleum reserves, technicians are prepared to make synthetic motor fuels from other raw materials thanks to the availability of welded processing vessels capable of operating in any range of temperature and pressure which may be required.

Transportation Solved

Also, the huge transportation problem of the petroleum industry has been solved by use of welded pipe lines. Universal application of welding from oil field, through refinery, distribution lines to welded underground filling tank and through a welded pump into the welded tank of the automobile, has eliminated many serious losses due to leakage, evaporation, corrosion, fire and explosion.

Another typical example of increasing fields of welding applications is seen in manufacture of railroad rolling stock where welding makes possible a reduction of 5 tons from weight of a freight car to reduce annual cost of operating that car by nearly $100. This explains why car shops now are being built to weld freight cars, passenger cars and diesel electric locomotives on a production line basis.

Designs Presses For Arc Welding

■ In the production of heavy machinery bases and frames, Clearing Machine Corp., Clearing, Ill., makes use of all-welded designs. Included are steel presses ranging from 300 to more than 3000 tons in capacity. Fig. 1 shows six P & H-Hansen Smootharc welding sets at work on a 400-ton, single-action, 4-point suspension, power press to be installed in an automotive plant in England. The crown, with 132 inches of die space between uprights, weighed more than 45,000 pounds and required more than 450 man-hours of welding. Using approximately 1400 pounds of coated electrodes, the welders averaged 0.03-pound of rod metal for every pound of steel.

Fig. 1—Six P & H-Hansen Smooth-arc welding sets at work on a 400-ton power press

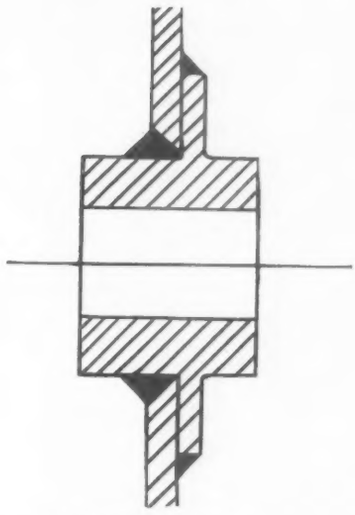


Fig. 3—Illustrates how steel members themselves are made to carry principal strains of shear or torsion

Fig. 2 shows the block on which the upper die for the 400-ton press was attached. This also was of steel plate and weighed 24,000 pounds. In these jobs one set of welders makes the tack welds while another set completes the welds.

This company has developed its own method of making welds so the welded areas are protected from heavy strains. Fig. 3 shows how the steel members themselves and never the welds, are made to carry the principal strains of shear or torsion. The bearing hubs are thrust through the crown plate for support, then welded inside where the weld has a large section in compression. This method is more expensive but has been profitable owing to complete lack of weld failures.

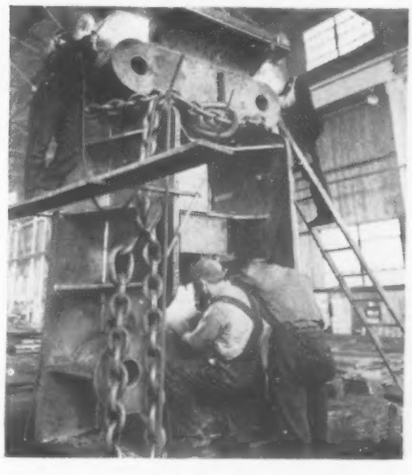
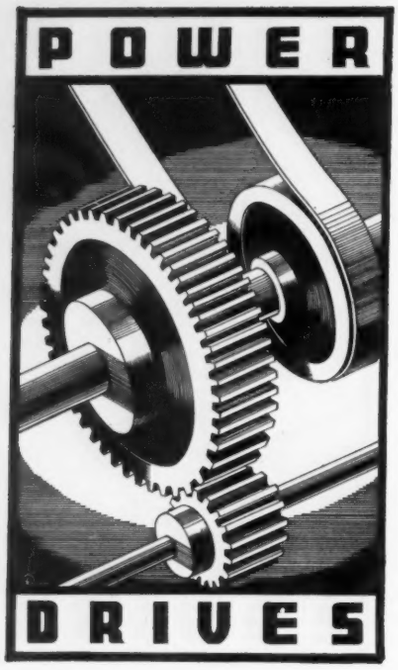


Fig. 2—Shows block on which the upper die for the press was attached



Drive Mountings

Changing both old and new machine tools to individual drive increases flexibility and efficiency. Utilizing ceiling countershafts already installed cuts cost of changeover

■ IN REARRANGING the toolroom and production departments at Springfield, Ill., crawler-tractor plant of Allis-Chalmers Mfg. Co., all machines were adapted for individual drive. This made it possible to locate machines to better advantage in relation to handling the work and facilitated the layout of equipment.

Relocating the battery of eight lathes in the toolroom involved an interesting method of mounting motors and countershafts. Lathes are set parallel to each other and at right angles to windows to provide good natural lighting.

Instead of constructing a special motor mounting on the lathe and eliminating countershafting, motors and countershafts are mounted on the ceiling. A special overhead superstructure consisting of two 8-inch I-beams, set 30 inches apart, supports motors and countershafts. Motors rest on slide rails set on steel plates on top of the I-beams. Countershaft is mounted in roller-bearing pillow blocks attached to bottom of I-beams. The short center drive is by multiple V-belts with the slide rails providing for any necessary motor adjustment.

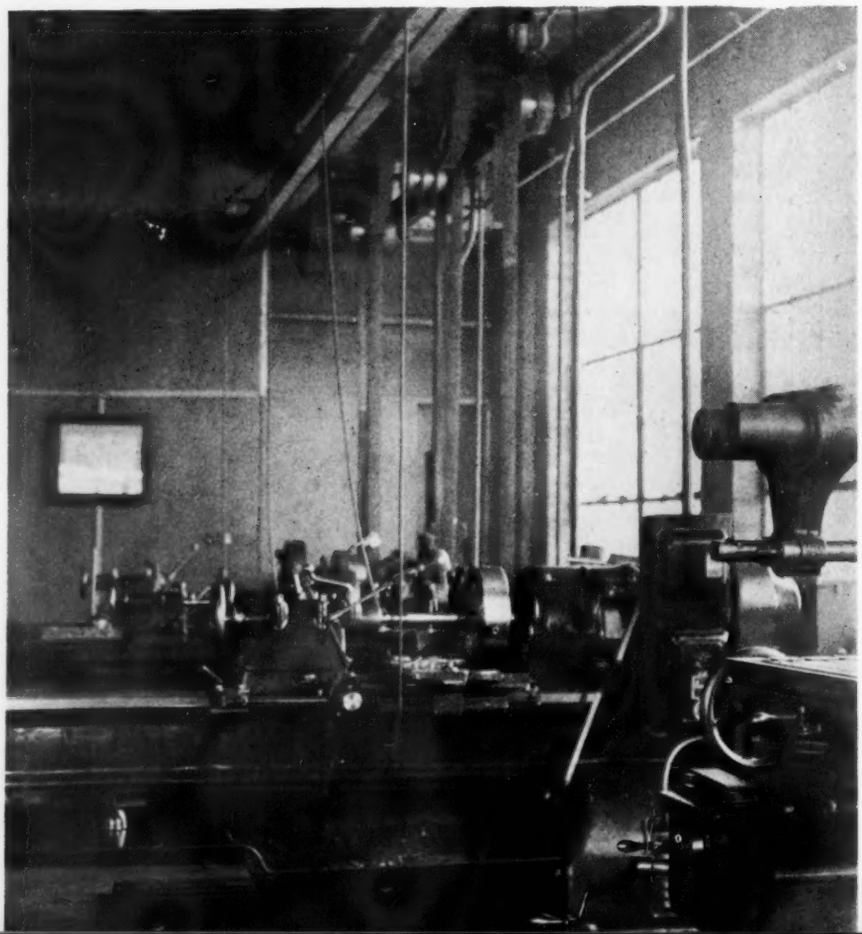
Mounting thus places all drives and superstructure directly over lathe heads, and permits placing all lathes parallel except for necessary aisle space. Furthermore it permits placing a ½-ton, electric, floor-operated trolley hoist on an I-beam monorail extending over the eight lathes parallel to the motor superstructure to handle heavy work. Since only a small proportion of the work requires the power lift, one hoist is able to serve all eight lathes.

Less Expensive

This type of motor mounting is less expensive than arranging a separate mounting for the motor and countershaft for each lathe. In addition, it cuts off less light as only belt edges and shifter handle are between work and window.

Each lathe motor is provided with a solenoid-operated torque brake to stop quickly and to prevent coasting. This brake is operated automatically through a conveniently located stop button. All machine tools, incidentally, are controlled by start-and-stop push buttons.

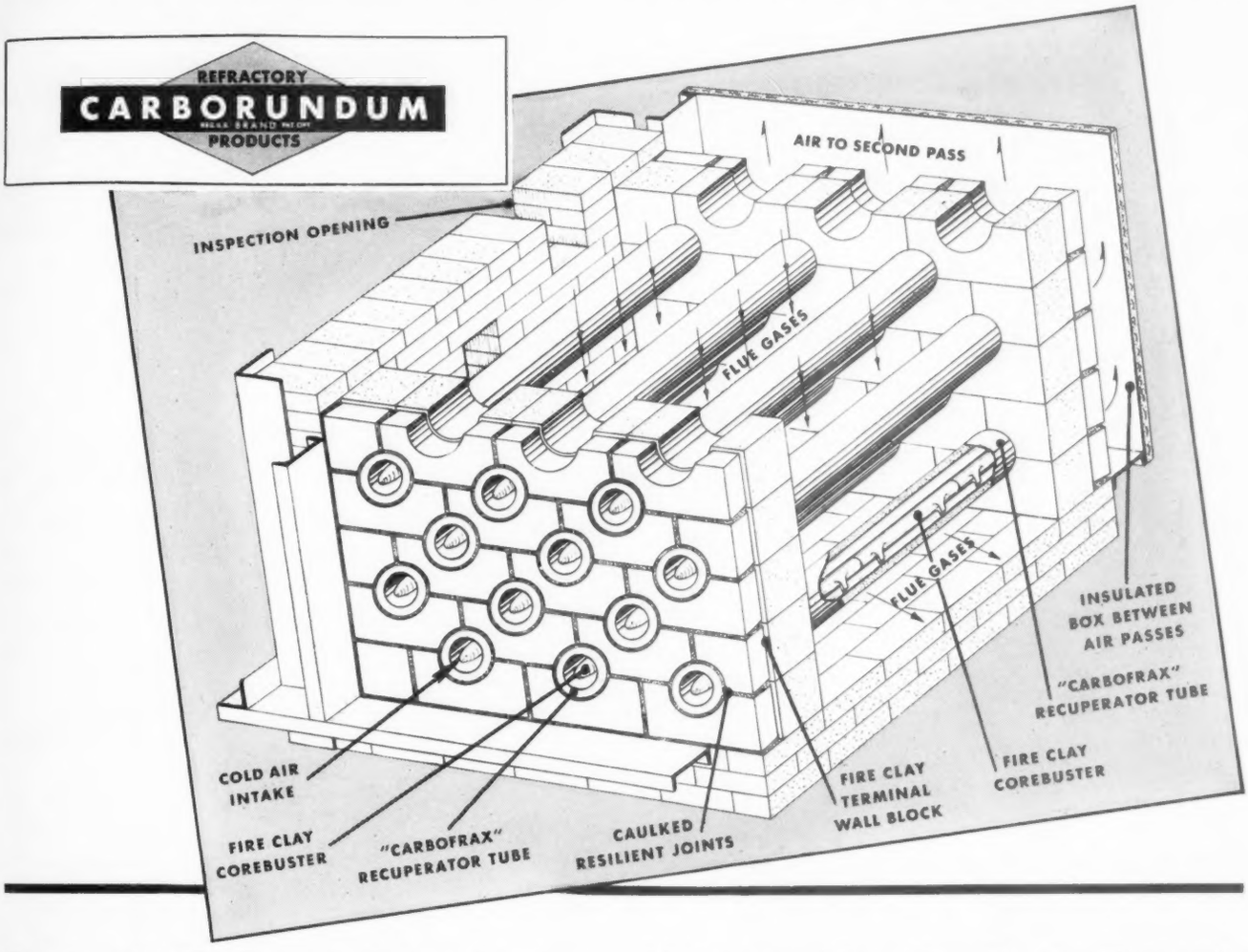
Motor mountings on individual machines such as planers, shapers, drill presses, etc. are provided with a specially constructed canopy or bracket of plate and structural shapes. On the planer, for example, the canopy-type motor mounting consists of a ½-inch plate reinforced by channels to prevent sway from planer reversals. Plate carries motor and countershaft for forward and reverse motion. Motor is connected by multiple V-belt short-center drive to the countershaft.



Mounting motors on top of parallel I-beams▼ with countershafts on the bottom permits installing monorail hoist to handle heavy work

ONLY THE CARBORUNDUM COMPANY RECUPERATOR HAS THESE ADVANTAGES

REG. U. S. PAT. OFF.



There is a wide difference in the design and construction of recuperators. Only The Carborundum Company Recuperator has these and other unique advantages and "plus" features.

Conserves Valuable Working Space

This recuperator is extremely flexible in design. It can be installed in practically any available space by using different arrangements of tube banks and thus eliminates any obstruction or blocking off of valuable working space around the furnace.

Rapidly Attains Maximum Air Temperature and Operates With Minimum Variation

"Carbofrax" transmits heat twelve times as rapidly as fireclay and the "Corebuster" forces intimate contact of the air with the tube wall as well as increasing the useful heat transmitting surface. Therefore, the time lag in attaining the maximum temperature is slight—the temperature of varying volumes of air occasioned by changes in the rate of operation is maintained at practically a constant point. The combination of "Carbofrax" (silicon carbide) tubular heat transfer element and the patented "Corebuster" assures maximum heat recovery.

• • •

These are only two of the important advantages of The Carborundum Company Recuperator. It will pay you to investigate *all* of them before making any decision on a new or rebuilt furnace. Additional advantages will be discussed in our next advertisment, but in the meantime our experienced engineers will be glad to give you complete information. They are available at the district sales branches listed below.

THE CARBORUNDUM COMPANY, REFRACTORY DIVISION, PERTH AMBOY, N. J.

REG. U. S. PAT. OFF.

District Sales Branches: Chicago, Philadelphia, Detroit, Cleveland, Boston, Pittsburgh. Agents: McConnell Sales and Engineering Corp., Birmingham, Ala.; Christy Fire Brick Company, St. Louis; Harrison & Company, Salt Lake City, Utah; Pacific Abrasive Supply Co., Los Angeles, San Francisco, Seattle; Denver Fireclay Co., El Paso, Texas.

(Carborundum and Carbofrax are registered trade-marks of The Carborundum Company)

Openings are placed in the steel plate for passage of vertical drive belts.

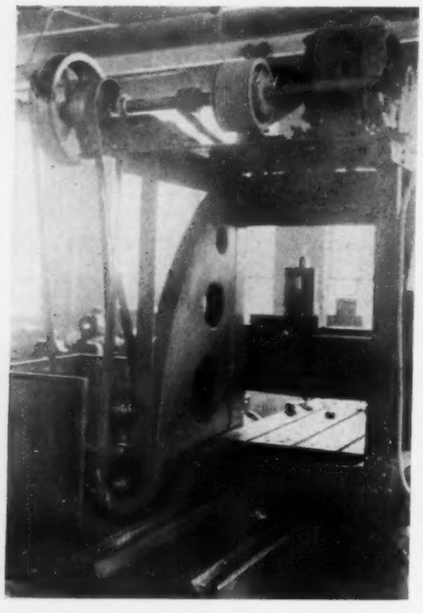
Practically all machine tools in the production shop also are driven individually. On older machine tools originally used in group lineshaft drives motor and countershaft, where necessary, also are mounted on specially designed brackets or canopies. Control is located on each machine so when a change in production makes it desirable to rearrange equipment the machine, motor and control can be handled as a single, complete unit.

Punch presses usually are arranged to drive from the motor by multiple V-belts to a pulley flywheel. In some cases the flywheel is grooved.

Brackets Utilized

On several machine tools where the motor originally was placed on the floor beside the machine, special brackets or canopies now permit placing motor above machine. In some cases long-center multiple V-belts are used. Mounting motor above machine removes drive from the floor and makes machines more accessible from all sides, thus economizing in floor space as well as permitting moving the machine as a unit.

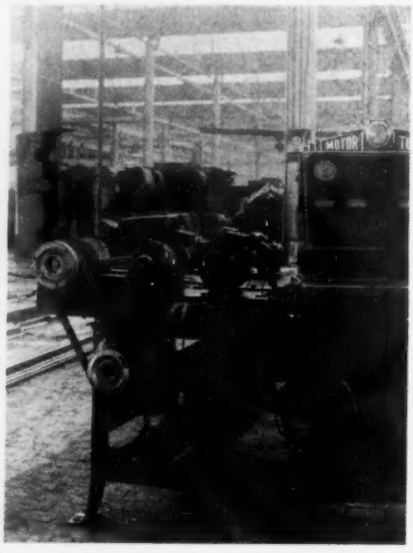
Newer machine tools usually have the motor in or on the units. Older types of machine tools have in practically all cases been modernized by placing the motor on the machine. In same cases this was necessary to provide free headroom for crane operation; in all cases the freedom of rearrangement and greater flexibility of operation have proved advantageous.



Older machine tools were adapted to individual drive by building bracket mountings for motor and countershaft

Power factor correction is obtained from a 175-horsepower synchronous motor operating at 1200 revolutions per minute on a compound air compressor providing air at 100 pounds pressure. Motor is connected to compressor by 15 V-belts. Sheaves are changed during slack periods of production to change speed 260 to 160 revolutions per minute thus decreasing output of the compressor and leaving the motor in continuous operation to provide power-factor correction at all times.

Alternating current for power, lighting and electric heat, purchased at 2300 volts, 3 phase, 60 cycles, is stepped down to 220 and 110 volts in the old building. Equipment in new building uses current at 440 and 110 volts, in line with the modern tendency to use higher voltage and thus reduce wiring size and costs. This required an entirely new transformer and distribution system. Use of the higher voltage will be followed on all new additions, except in the original plant.



An adjustable variable-speed drive is provided for testing magnetos of different ratings by using variable-pitch sheaves with V-belts

Incoming power meter with 220 and 110-volt transformers are located in the original building. Power is carried to the new building at high voltage in six 300,000-circular-mil cables in two 3-inch conduits. All six wires go through a circuit breaker and then to 440 and 110-volt transformers.

New building is used largely for receiving, storage, and assembling tractors as well as cutting and forming structural shapes. Thus points using power are widely separated so practically all power is distributed in conduit runs from junction boxes at central points.

In original building, heavy copper feeders in conduit lines distribute power to junction boxes located from 80 to 100 feet apart. Each box has a distribution cabinet so no conduit run to a machine extends more than 40 to 50 feet.

All machines except those with large motors are operated by push-button remote control through automatic starters. Motors up to 20 horsepower are started across the line; larger motors are started manually. Very few motors are larger than 25 horsepower.

Practically the only use of direct current is for magnetic chucks. All cranes have alternating-current motors. Only one machine is powered with a direct-current variable-speed motor. Other machines requiring variable speed are driven through variable-diameter sheaves with the motor mounted on a special base.

♦

Complete replacements on a basis of 60 per cent of average expected life are scheduled in one plant on contact points and other parts of control equipment which wear or burn out in operation where any interruptions or delays in operation of important machines would cause serious loss or interruption of production. The plant engineer believes that sacrificing this 40 per cent of expected life is safer and less expensive in the long run than trying to operate to the limit.

♦

A man capable of deciding quickly when a part, motor or control has outlived its usefulness and is not worth further repair is a valuable asset to a maintenance department. Much money and time may be wasted in attempts to repair or rebuild wornout equipment; many times usable parts and equipment may be salvaged economically. The decision is best made by someone thoroughly familiar with welding and rebuilding practices and shop facilities for doing this work.

♦

Destructive arcing on a large commutator subjected to very severe service conditions was finally traced to careless grinding and undercutting of the mica, and improper settling and spacing of the brushes. Originally the trouble had been blamed on the brushes, and the products of several different manufacturers tried before a careful and thorough investigation discovered the real cause.

♦

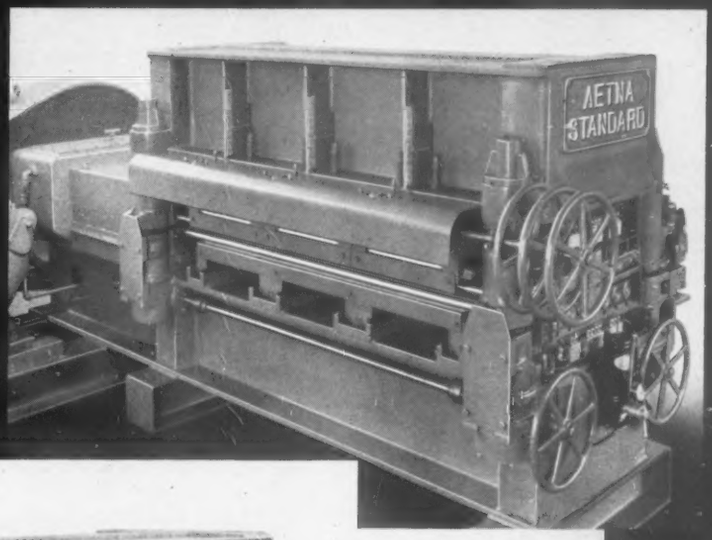
Does the costs of repair arise from natural wear and tear, or from neglecting to give drives proper and regular attention?

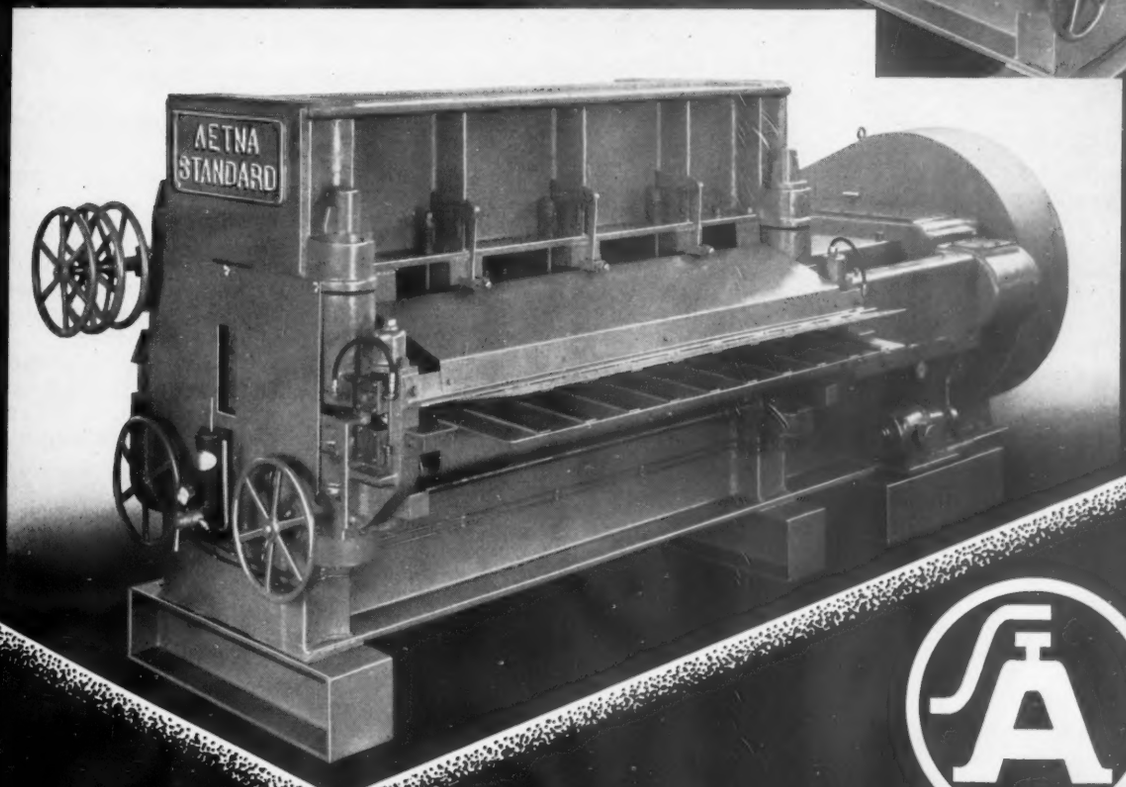
HIGHER SPEEDS—GREATER RANGE OF GAUGES—WIDER MATERIAL WITH

AETNA-STANDARD'S

ALL-WELDED BACKED-UP LEVELLER

The new Aetna Standard all-welded backed-up Leveller is designed to meet the most rigid requirements of the steel industry, and in it have been incorporated many improved details. Among these are new type couplings and spindles, a more powerful pinion and gear drive, and a unique arrangement of rollers which facilitate entering of the material.





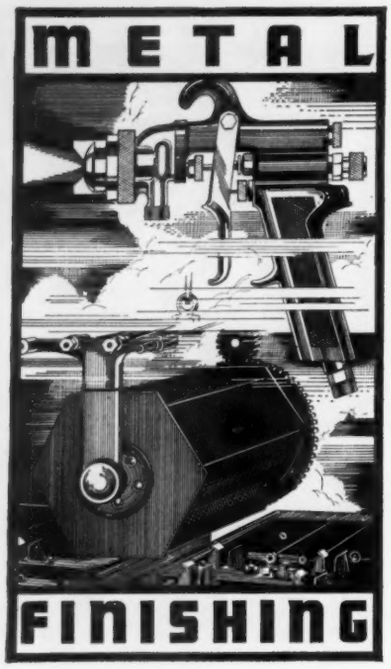
THE **AETNA-STANDARD** ENGINEERING COMPANY

CONSULTANTS—DESIGNERS AND BUILDERS TO THE STEEL AND NON-FERROUS INDUSTRIES

YOUNGSTOWN, · OHIO, · U. S. A.

ASSOCIATED COMPANIES

Head, Wrightson & Co. Limited, Thornaby-on-Tees, England. Aktiebolaget Arboga Mekaniska Verkstad, Arboga, Sweden.



Metallic Coatings

Bright, metallic coatings, uniform even in holes and usually forming alloys with body metal, are produced by new method. Chemical reaction forms coating by atom replacement

■ A NEW METHOD of coating metals with metals, known as the Martin process, appears to offer possibilities in the field of metallic coatings. While not yet developed for commercial use, experimental work has shown these new coatings possess characteristics not found in coatings produced by electroplating, hot-dipping, spraying or cementation.

The new coatings actually become integral with the body metal; they are uniform, even in holes and other places difficult of access; surface details are minutely preserved as the coatings are formed by replacement rather than by simple addition; the coatings are bright—usually forming alloys with the base metals. In addition, there is little or no change in volume.

Uses Chemical Reaction

The Martin process utilizes a chemical reaction between metal at the surface of a metallic object and a volatile salt containing the metal to be deposited. High temperatures accelerate the replacement reaction, resulting in diffusion of coating metal into the base metal and formation of alloys at the surface. This reaction between a solid metal A and a volatile salt Bc, consisting of a coating metal B and a negative radical c, and yielding the volatile salt Ac and the metal B can be written:

A plus Bc goes to B plus Ac

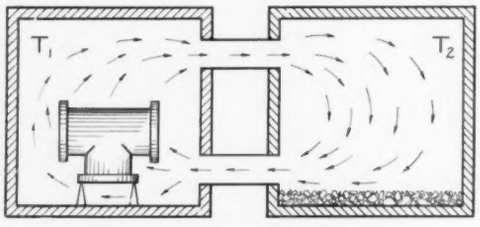


Fig. 2—Schematic diagram of Martin process furnace. Convection circulates gases

This is a replacement reaction in which metal B replaces metal A atom for atom. Petrified wood is the result of a similar reaction. The reaction is reversible and quantity of metal B replacing A depends upon such factors as temperature, pressure and concentration. It may proceed completely to the left or to the right, or incompletely to a degree providing equilibrium under the particular combination of temperature, pressure, etc. present.

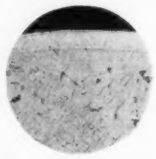


Fig. 3—Martin process coating of aluminum on mild steel

Three conditions are essential to make this reaction proceed continuously; metal A must be replenished as it is removed by substitution of metal B, volatile salt Bc must be replenished continuously and the product volatile salt Ac must be removed continuously. These requirements are accomplished by circulating the gases as detailed later in description of a typical setup for handling this work.

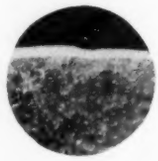


Fig. 4—Similar coating on high carbon steel

Working with vaporized salts makes a tremendous range in temperatures available, as contrasted with the approximate 100 degree Cent. range between freezing and

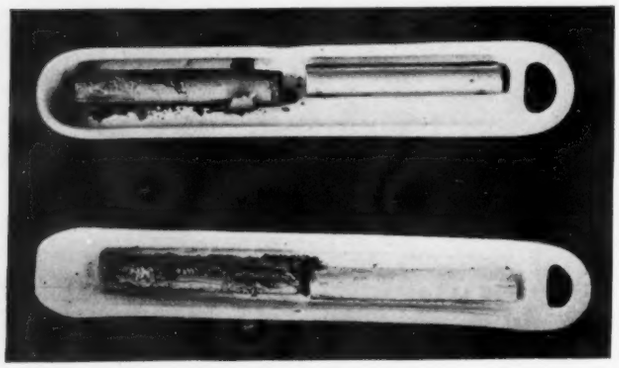


Fig. 1—Treated and untreated bars of iron after air exposure at high temperatures

Abstracted from Calibron Notebook No. 4 by permission of Calibron Products Inc., West Orange, N. J.

Metal parts for these famous machines are cleaned with

ORTHOSIL

TRADE MARK

L C SMITH & CORONA TYPEWRITERS INC. is a firm that has long been known for typewriters and office machines accurately built and handsomely finished. In the exacting manufacturing operations of the Groton Plant of this company, an important problem is the effective cleaning of steel parts prior to finishing. Heavy coatings of cutting oils had to be removed rapidly, completely—and economically.

For this purpose, Orthosil was selected as the metal cleaner. Not only did it prove its speed and thoroughness in removing grease and oil, but it substantially reduced the cost of the alkaline cleaning operations. A far smaller quantity of Orthosil is needed to do a better job.

This has been the experience of many leading manufacturers when they change to Orthosil. The advantages of this product are definite, and can be demonstrated in your plant. Why not try Orthosil, and check it against other alkaline cleaners? Write for full details. Address Department F.

PENNSYLVANIA SALT MANUFACTURING CO. • Est. 1850
Widener Bldg., Philadelphia, Pa.
New York · Chicago · St. Louis · Pittsburgh · Tacoma · Wyandotte

- Particularly effective in electrolytic cleaning due to its high conductivity
- Assures quicker action than other alkalis
- Prevents grease and dirt from re-depositing
- Easy to pour, quick to dissolve
- Dry—highly concentrated—economical
- Quickly removes the grease, soot, dust and various other kinds of dirt unaffected by pickling acid
- Leaves material clean for further processing

PENNSYLVANIA SALT *Chemicals*

boiling point of aqueous solutions. This wide temperature range affords an easy way to reverse the reactions in this process to regenerate the gases and provide economical operation of the entire system.

Range of application of this new method is limited by but few conditions. The two metals must be capable of forming alloys and, for deep rooting, the surface products

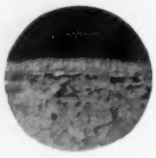


Fig. 5—Aluminum coating on mild steel produced in presence of illuminating gas

must be able to diffuse into the metal being coated. Most pairs of metals meet these conditions.

There must be a choice of a negative radical. It must form volatile salts with each of the metals involved throughout a temperature range that will permit relatively high speeds of diffusion. The reaction at practical temperatures must proceed in the direction favoring deposition of the coating metal. If the reaction can be reversed, then there is the additional advantage that the gases can be regenerated, but such reversibility is not necessary to the coating process. Chlorine and other halogens usually form volatile salts with the more common metals. The carbonyls are of interest in the case of nickel and iron.

One application of this new method said to offer distinct advantages is coating iron with aluminum to prevent oxidation at high temperatures. The great resistance of aluminum-coated iron is well known, even 2 per cent aluminum alloys showing improvement in oxidation resisting properties. At 4 per cent, this improvement becomes appreciable. Alloys with 6 per cent aluminum are only slightly inferior to nickel-chromium alloys, while 8 per cent

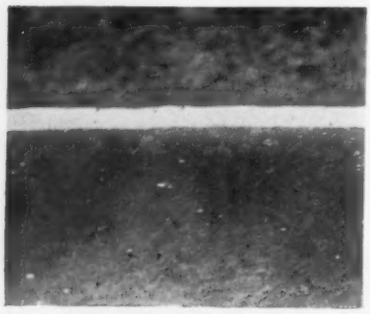


Fig. 6—Polished section of aluminum coated steel bar oxidized in open flame

aluminum-iron alloys are in some cases even superior. Thus with a coating of aluminum in iron at its surface, ordinary iron can be made to withstand oxidation at high temperatures.

Fig. 1 shows bars of iron coated with aluminum by the Martin process together with untreated iron bars as they appeared after exposure to currents of air at high temperature. The two lower bars were given a more severe exposure. The coated bar's surface merely took on a matte appearance due to a thin protecting layer of aluminum oxide, while the unprotected bar was unsound and badly oxidized. Other gases normally found in furnace atmospheres also were well resisted.

Deposits Aluminum

Deposition of metallic aluminum on iron by the Martin process takes place in an inert or reducing atmosphere containing aluminum chloride gas at a temperature of 750 to 1100 degrees Cent. Aluminum replaces iron atom by atom. The change from aluminum chloride vapor and solid iron to iron chloride vapor and solid aluminum reverses throughout the lower temperature range of 550 to 650 degrees Cent. At the high temperature range, aluminum is displaced from its chloride by iron; at lower temperatures iron is displaced from its chloride.

Since aluminum chloride readily decomposes in a moist atmosphere,

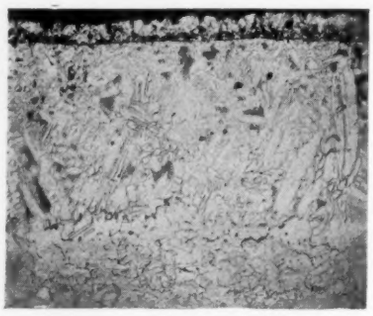


Fig. 7—Aluminum coating 0.0225-inch thick produced on copper bar

water vapor must be excluded from the reaction chambers. The process has been carried out successfully in atmospheres of hydrogen, of dissociated ammonia gas, volatilized and dissociated ammonium chloride, and illuminating gas. Undoubtedly a controlled atmosphere of dried Dx gas, treated blast furnace of other gas, also would be suitable.

Regeneration of gases is accomplished in a separate chamber by passing the used gases over scrap aluminum at a comparatively low temperature. Iron is deposited on the aluminum, while aluminum chloride vapor formed goes into the other chamber to deposit aluminum

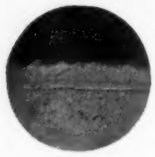


Fig. 8—Illustrating diffusion resulting from reheating a coated specimen

on the iron. The chlorine simply carries the aluminum to the iron and the iron to the aluminum. Energy required is supplied in form of heat. Regeneration as outlined, however, makes the operation particularly economical especially when scrap aluminum is used in generating the aluminum chloride.

Furnace construction is relatively simple. A convenient arrangement is shown in Fig. 2 utilizing two connected reaction chambers,

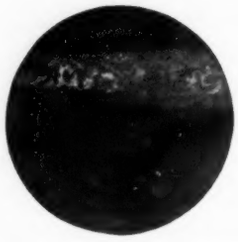


Fig. 9—Copper bar coated with aluminum and oxidized by heating in current of air

one for coating and the other for regenerating. Iron and alumina brick may be used as construction materials. Iron in the coating chamber becomes coated with aluminum alloy and remains unattacked in the regenerating chamber. Alumina brick is not attacked by gases in either chamber. Radiant tube gas heating may be used, employing iron alloy tubes.

A welded or cast iron box divided into two compartments makes

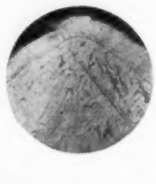


Fig. 10—Specimen coated with aluminum and subsequently hot worked and cold forged

an economical construction for smaller objects and for experimental work. In this case, ammonium chloride is placed in the regenerat-

ing chamber and arrangements made for relief of excess pressure. When heated ammonium chloride volatilizes at 338 degrees Cent. and dissociates to produce hydrochloric acid, which forms the chloride, and a neutral atmosphere of nitrogen and hydrogen. The box, or series of boxes with luted seals, may be charged side by side in one furnace. Boxes also may be arranged as hoods or covers using alumina sand for sealing at the base, similar to annealing cover practice.

In experimental work, a two-chambered iron container was used successfully. If care is taken to cool the regenerating chamber first, all chlorides in the gases condense there, leaving the coating chamber bright and clean. It is necessary to keep the regenerating chamber sealed against water vapor while cool as the aluminum chloride is very hygroscopic.

Coating by this method may be combined with other operations such as normalizing and annealing. In the case of aluminum on iron, subsequent heat treatments also can be safely given because the resulting coating is very resistant and tenacious. Coating may be done simultaneously with heating of slabs or billets or in intermediate anneals. While soaking, ingots may be coated to lower scaling losses during subsequent hot rolling. Martin process coatings are very tenacious because the diffusion which takes place makes the coating integral with the coated metal. Hot or cold mechanical work does not break the surface. In reduction by rolling, forging or wire drawing through dies, the coating remains at the surface unbroken, even though surface area has been greatly increased.

Copper Coated Also

Although only the coating of iron with aluminum has been described, copper has been coated with aluminum using aluminum chloride and the reversible feature for regenerating the gases. An aluminum bronze coating is produced, having the appearance of gold. Deposited on a smooth surface, the coating takes a brilliant polish. Copper also has been deposited on iron by this process.

Approximately 14 per cent silicon in iron results in high resistance to acids and other chemicals. As silicon chloride is volatile and silicon will replace iron at high temperatures, this same process could also be used to produce silicon-iron alloy on the surface.

The Martin process provides complete and uniform coverage of the surface of any object because the method is inherently self-balancing. Any unreplaced metal at the surface of the object being coated will be sought out by the gases because it is most accessible and is in greatest concentration. Vaporized metallic salts are much more mobile than salts dissolved in a liquid, and back concentrations of the salt resulting as a product of the reaction are dispelled more readily. An alloy is formed between the metal of the object and the coating metal with

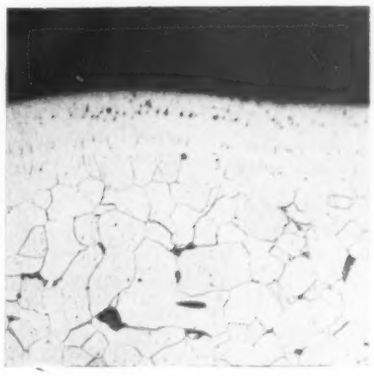


Fig. 11—An 0.0081-inch aluminum coating on mild steel

the highest percentage of the coating metal near the surface. If no diffusion period is permitted after removal from coating gases, coating metal alone should be present at the surface, completely covering the object.

The group of photomicrographs in Fig. 3 to 12 shows round bars that were coated and then molded in bakelite to maintain a plane surface clear to the edge of the metal when it was subsequently cut and polished. Surface was etched or exposed to oxidation at high temperatures to bring out grain structure. The bakelite appears as black or mottled areas at top of illustrations.

Fig. 3 shows a coating of aluminum on mild steel. Sample was etched with 5 per cent picric acid in ethyl alcohol for 2 minutes and shows a magnification of 20 diameters. Fig. 4 is a sample treated in same manner and with same magnification showing coating of aluminum on a higher carbon steel. Coating maintained its uniform thickness but closely followed the surface irregularities. Fig. 5 shows coating produced on mild steel in presence of illuminating gas. Some carburization of the surface took place as shown by the darker area of pearlite. Formation of coating, however, impeded further carburization.

Prevents Oxidation

A polished cross section of an aluminum coated steel bar, 0.59 per cent carbon, oxidized in an open flame is shown in Fig. 6. The coating, white band, of aluminum in iron was not oxidized, while body of metal in lower part of picture turned deep blue from oxidation. The uniform thickness is 0.0044-inch. Aluminum coating was produced by heating sample in aluminum chloride gas for one hour at 950 degrees Cent. Magnification is 50 diameters.

A coating 0.0225-inch thick obtained by treating a copper bar in aluminum chloride gas for 1.5 hours at 900 degrees Cent. is shown in coating, consisting mainly of solid solutions of aluminum bronze. Magnification is 50 diameters.

Fig. 8 illustrates the diffusion of an original coating on mild steel obtained by reheating the coated specimen to 980 degrees Cent. in a current of air for more than seven hours. The second layer of advancing aluminum, caused by diffusion into the iron, is plainly visible. Magnification is 20 diameters.

Result of subjecting a copper bar coated with aluminum to a strong oxidizing attack by heating in a current of air is shown in Fig. 9. Aiuminum coating layer is the bright band at top. Below is the copper, covered with scales of black oxide. Magnification is 20 diameters.

Some indication of strength of bond between coating and body metal is given by Fig. 10 which shows a specimen coated with aluminum, hot worked and then cold forged. The coating is continuous and undamaged even where the surface has been bent and crushed. Magnification is 20 diameters. Fig. 12 demonstrates extreme tenacity of a coating produced by treating a mild steel bar with aluminum chloride gas. Sample was cold forged after coating. Even at the sharp corner there is no loss of bond between body and coating. Magnification here is 100 diameters. Fig. 11 shows an 0.0081-inch aluminum coating obtained on a mild steel bar.

While the Martin process is said to have commercial possibilities it

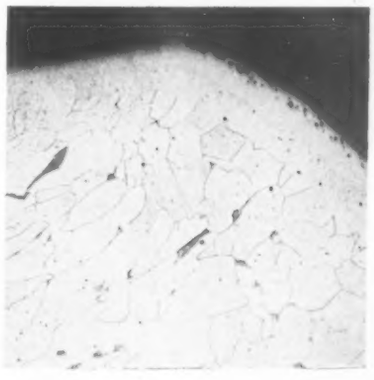


Fig. 12—This sample was cold forged after coating mild steel with aluminum

is yet in the embryo stage and no furnaces are set up at present for production of samples or experimental coatings.

Completes New Rod Mill

(*Concluded from Page* 39)

pouring-type reels where rod is directed onto a revolving coil plate through a stationary nozzle. These reels are driven by adjustable speed motors powered from a generator connected directly to motor driving fifteenth stand. Bundles here are same size as those made on laying reels. They are transferred horizontally to same conveyor serving laying reels.

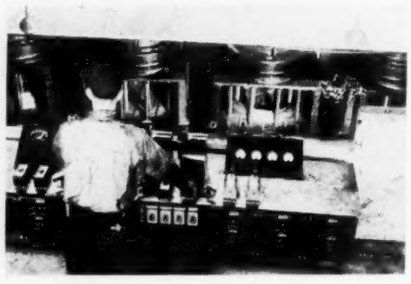
Chain coil conveyor is 330 feet long, with cast steel links designed so chain groove is completely filled to prevent stray rod ends from getting caught. At end of conveyor, bundles are transferred automatically to hook carrier and on to storage or shipping.

Delivered by Run-on Table

Bars to be sheared into straight lengths also are finished on fifteenth stand and delivered by a hot run-on table to a 270-foot double-sided cooling bed. Since many sizes of finished lengths are longer than cooling bed, automatic shearing equipment is provided in run-on table to cut bars into lengths. Cooling bed surface is notched, carry-over type, consisting of stationary and moving racks. All notches are machined accurately to insure proper alignment of bars during cooling. Cooled bars are assembled into groups and transferred to cold run-off roller tables leading to stationary bar shears and back shear tables.

Two back shear tables, each 75 feet long, are provided. A gauge bar equipped with three hand-traversed gage heads extends full length of each table. Gage heads are actuated by electrically-driven hydraulic thrustors and have push-button control operated by shear men. Sweep-offs of back shear tables are operated by electric motors. Bending equipment for reinforcing bars includes two heavy bar benders and a single stirrup bender.

Two separate lubricating systems have been installed; one handles high viscosity oil and supplies lubricant for gear drives, pinions and Morgoil bearings of the 9-stand roughing and the 4-stand intermediate trains. Second system handles lighter viscosity oil and serves pinions, drives and Morgoil bearings on 2-stand looping mill and 6-stand finishing mill as well as reel drives. Both pressure systems are automatic in operation and arranged for full and continuous filtration.



These laying reels handle rod below $\frac{3}{8}$-inch diameter

Annealing equipment consists of four radiant-tube furnaces and 12 bases with inner covers. Six of the bases are for annealing a single pile of rods and handle coils of 46-inch outside diameter. Remaining six bases are equipped for four or eight piles and are used for coils up to 24 inches outside diameter.

Outer rectangular covers have sprung arched roof, constructed of ½-inch plates braced by H-beam columns and lined with light-weight insulating material. Two covers measure 8 x 8 feet, the other two 6 x 6 feet. Inside, along each side, and extending from both ends toward the center, are three tiers of horizontal, alloy hairpin tubes. These rest freely on brackets to permit expansion and contraction; the open ends of the tubes are securely bolted at the opening in the outer casing. A mixture of coke oven and blast furnace gas, of about 500 B.t.u.'s is burned in the tubes. All exhausts tie into a main header line to a fan connected with a 5-foot stack which discharges into the air. A stack damper regulates amount of air sucked in around burners.

Correct temperature is maintained by automatic air-fuel ratio control. Thermocouple is inside inner cover at approximate center. Temperature of steel is measured with a couple near base of pile. Annealing temperature of 1300 to 1400 degrees Fahr. generally is used. Annealing cycle requires 8 hours for heating and soaking, 16 hours for cooling and reloading. Three bases comprise a unit; while one is being heated another is cooling and the third is being recharged.

A protective atmosphere is maintained under inner cover. Deoxidizing gas is prepared from a mixture of blast furnace gas and coke oven gas treated in a battery of machines with an hourly capacity of 1500 cubic feet. Carefully purified and dried, this gas is delivered to furnaces at a line pressure of 1 to 1½ inches of water. A fan in furnace base circulates it.

Guide grinding facilities include one large and two small grinders. Roll shop is equipped with three 18-inch and three 26-inch roll lathes, one 16 x 96-inch grinder and one profile cutting machine.

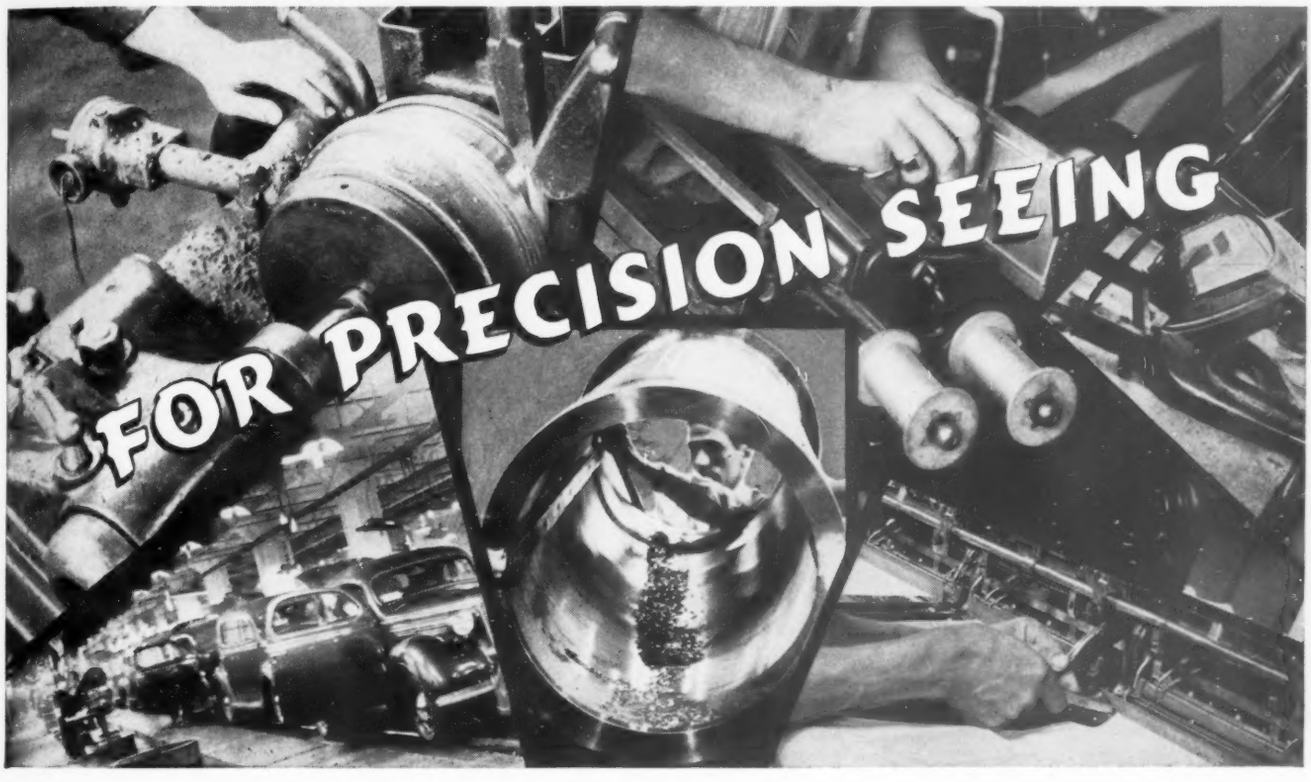
Notch - type bar cooling table presents an impressive sight

Steel Is Used To Strengthen Gaskets

■ Steelbestos gaskets, manufactured by Detroit Gasket & Mfg. Co., Detroit, indicate that the strength of steel is apparent even in the quality of gaskets used for such applications as cylinder heads and manifolds where high temperatures, expansion and bolt pressures are involved.

Gaskets are made from a combination of asbestos sheets with steel backbone. The sheets are previously treated to make them impervious to gasoline, oil and water. It is then pressed so as to form countless small tongues of steel projecting from either face of the sheet. A steel backbone and two sheets of asbestos are then pressed together so that the tongues are clinched over, literally welding this steel and asbestos sandwich into one sheet. This backbone is said to eliminate the tearing of the gasket at the bolt holes.

still "TOPS"



Cooper Hewitt Mercury Lighting

Take it from the man at the bench or on the assembly line—the sharp, clean-cut clarity of sight under Cooper Hewitt lamps still ranks as "tops" for precision work in industry.

These long-tube light sources are naturally low in *glare-factor:* thus, the high illumination levels required for checking fine detail can be achieved without eye-stabbing reflections from bright metal parts. Shadows are virtually non-existent. There's a sense of coolness about Cooper Hewitt light that makes for physical as well as visual comfort.

Now, too, with the *new* Cooper Hewitt lamps . . . 22% more efficient than previous types . . . "high see-ability" lighting for inspection or production areas is less expensive than ever before. Plants where *costs are known down to the last penny* are installing Cooper Hewitts right now—as a means of spreading slim modernization budgets *wisely* as well as *widely* throughout the plant.

Why not discuss the possibilities of similar gains in your own plant with a representative who knows the economics as well as the engineering of modern industrial lighting? General Electric Vapor Lamp Company, 885 Adams Street, Hoboken, New Jersey.

GENERAL ELECTRIC
VAPOR LAMP COMPANY

904C

Precision in Filing Work

■ ONE OF the highly important points to be considered in obtaining a filing job that is accurate, especially on hand-filed work, is proper selection of files, and in some cases their proper preparation.

Where one of the many forms of filing machines available is in use, the work produced will lack the imperfections which occur because of unsteadiness of the human hand and eye. But there are certain things which may be done to offset such unsteadiness.

One of these is a careful consideration of the finished cut desired, and the file shape which will give such a job with the least trouble. Obviously, in finishing up square internal corners, a square file is the thing to use. With internal corners somewhat less or more than square, a lozenge file will be in order. Again, a crochet or a knife-edge file may be just what is needed to take the grief out of a hand-filing job of delicate nature.

Another point is the proposition of making a file safe. It may be desired to work up very closely into a corner, for instance, and yet the wall against which one is working must be absolutely left unscratched by the file. The problem is how to manage such a circumstance, when there are teeth all around the file, and when every man has a certain amount of unsteadiness in his hands. The answer is to take a file to the grinding wheel, preferably to the surface grinder, and remove the teeth from that side which will be working against the wall mentioned. One may even go over the ground surface of the file with a slipstone to leave it highly polished, if desired. A file so treated may be used while bearing very smartly against a side wall, without cutting it or altering its shape in the least.

Conveying Machinery by An English Authority

■ *Conveying Machinery*, by William H. Atherton; cloth, 188 pages, 6 x 9½ inches; published by Technical Press Ltd., London; supplied by STEEL, Cleveland, and in Europe by Penton Publishing Co. Ltd., Caxton House, Westminster, London, S.W. 1.

This volume is a record of first-hand experience, the author having been responsible for construction of many of the conveying plants described. It reflects the experience of 32 years as a specialist in design and construction of conveying machinery.

It is designed to be helpful to directors and managers of large firms desiring to install additional conveying plant, factory and efficiency engineers advising on the layout and selection of such equipment and draftsmen engaged in detail designing of conveying machinery.

A chapter on numerous types of conveying chains and their application will be found particularly helpful to designers and users of conveyors and elevators.

A table of densities of bulk materials is provided, progressively arranged from the lightest to the heaviest substances of industrial interest. A comprehensive bibliography contains adequate references to many books, pages and technical articles of interest and value.

Welded Cracking Still

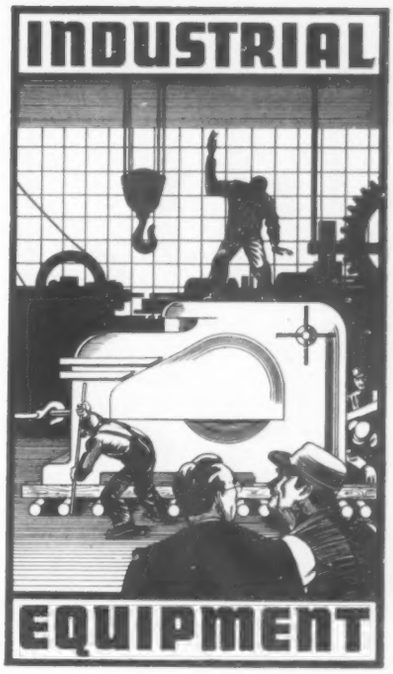
■ **This cracking still which was built by L. C. Koven & Bros. Inc., Jersey City, N. J., for an oil refinery, was fabricated by welding columbium-bearing 18-8 stainless steel. According to the company this material is best for making intricately shaped assemblies for corrosion-resistant service at high temperatures. Photo courtesy Electro Metallurgical Co., New York**

Rolls Around Stack

■ **Here a brick-lined, riveted steel stack is being given a coat of aluminum paint. Platform is suspended from top of stack and has wheels turning on a vertical axis to facilitate horizontal movement around stack. Photo courtesy Aluminum Co. of America**

Uses Sisal for Buffs

■ Sisal, a tough fiber used in making rope and binder twine, now is used in sections prepared in mat form for intermediate operations between polishing and buffing. It is especially effective in removing minor imperfections or die marks from carbon steel, stainless steel, brass, copper and aluminum. Developed for this use by Hanson-Van Winkle-Munning Co., Matawan, N. J. Sisal sections are employed with tripoli compounds, stainless steel rouge and emery paste.



Gas-Electric Drive Provides Longer Life

■ Ready-Power Co., 826 Grand River avenue, Detroit, has placed on the market a new model gas-electric drive unit for industrial trucks which is said to provide longer life with reduced maintenance.

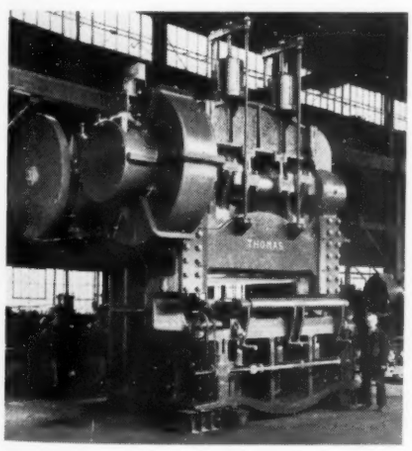
The unit comes in 36, 48 or 60 volts, and is built around a Continental engine of four cylinders developing 22.5 horsepower at 1000 revolutions per minute.

Features of the unit include dual belt-driven fan and water pump, fully enclosed magneto drive assembly, low pressure oil filter, new air cleaner and a new Syncotrol idling governor and improved carburetor. Belt slippage is also greatly reduced on the fan and pump drive, it is claimed.

The governor automatically maintains a constant voltage under load, and gives automatic idling at no load. It is arranged to give a range of four operating speeds electrically without changing the governor spring adjustment. Improved Bosch high tension inductor-type magneto is used which combines dustproof, waterproof and tamperproof features. Other features of the unit include a more compact muffler and an improved cooling system.

Aluminum Shear Cuts Two-Inch Slabs

■ Thomas Machine Mfg. Co., Pittsburgh, has placed on the market a new No. 22 shear for shearing aluminum alloy slabs up to 2 inches thick and 78 inches wide as the material comes from the mill.



The 12-inch stroke allows enough opening under the upper knife to clear curled material coming through over the tables. Lower knives have a special arrangement for quick adjustment for different thicknesses of material to be sheared. A hand wheel is provided to set the knives for various thicknesses of plates.

Gears of the shear are herringbone and completely enclosed in a welded gear case. All drive shaft bearings are Timken bearings. The flywheel is solid roll steel section with hubs welded on. Air with electrically controlled valve actuated by a push button operates the motor drive. The frame is counterbalanced by means of air cylinders. Frame of the unit throughout, including housing, ram, table and cross tie are all cast steel and strongly ribbed. No hold down is provided for this particular machine.

Zinc Test Determines Thickness of Coatings

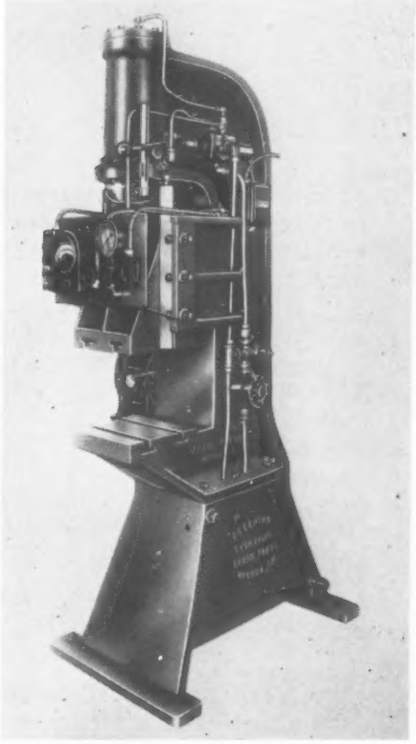
■ Hanson-Van Winkle-Munning Co., Matawan, N. J., has placed on the market a Zinc dropping test set for determining the thickness of electroplated zinc coatings by the Hull & Strausser method. The method is simple, requiring only a few minutes to make a determination.

Reservoir of the set is filled with the proper test solution and both stopcocks opened until all air is displaced in the delivery tube. Leaving the lower stopcock open, the upper stopcock is adjusted so approximately 100 drops per minute is issued from the burette tip. With the upper stopcock remaining in this position the flow is stopped by the lower stopcock.

Specimen to be tested is cleaned by rubbing with a cloth moistened with trichlorethylene and placed two or three inches under the capillary tip at an angle of 45 degrees from horizontal. The lower stopcock is opened and the solution allowed to drip on the specimen. The period required from the time the first drop touched the plate until the bare steel is exposed is measured with a stopwatch. Each elapsing second during the test represents a thickness of deposit of 0.0001-inch.

Molding Press Has Time-Cycle Control

■ Greenerd Arbor Press Co., Nashua, N. H., has placed on the market a No. 61-ND-E 15-ton, light



plastic molding press which is equipped with an automatic electric time cycle and ram control.

Frame of the unit is cast of hydraulic semisteel and equipped with steel piston and six piston rings. The ram is heat treated, ground and packed with chevron type packing. To take care of any seepage and ensuring a dry ram, the gland is bled back to the tank. A hydraulic pump, connected directly to a 20-gallon oil sump in the base, is mounted opposite a 5-horsepower motor. At the bottom of the ram is attached a platen guided by two steelways which can be adjusted to keep in direct line with the ram.

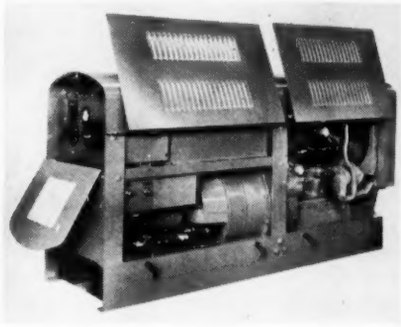
The control panel with stop-start-jog station, process timer, direct reading gage and emergency stop is mounted on the front of the press. An electrically operated valve, actuated by a push button puts the ram in motion. A hand control is also embodied, which can be disconnected when the electrical control is in use.

Some of the dimensions of the various parts of the unit include a ram of 2 7/16 inches, platen covering an area of 12 x 12 inches and working table of the same size provided with two T-slots for mounting fixture. Distance from center of ram to back of throat is 9½ inches and the length of steel ways 15 inches.

Diesel Engine Used For Welding Generators

■ Lincoln Electric Co., Cleveland, has introduced a diesel engine which compares with the weight, cost as well as operating speed of gasoline motors for use in driving arc welding generators.

The new engine cuts fuel costs 33 per cent to 86 per cent, depending upon price of fuel oil used. Maximum efficiency and service economy of the engine are assured by a new diesel princple embodying combustion chambers. By accelerating turbulence of the fuel and air mixture, this device affords more complete combustion, increasing efficiency and minimizing smoke and noise.



Other engine features include pintel type fuel nozzles which are nonclogging, five filters and the required number of 6-volt batteries. The main welding generator is used to start the engine, otherwise the engine is entirely compact.

The arc welding generator used is of the 300-ampere "shield-arc" SAE type, equipped with dual-continuous control. Features of this generator include continuous voltage control, continuous current control, independent excitation and laminated magnetic circuit.

Designed for Bulky Pieces

■ Hammond Machinery Builders, Kalamazoo, Mich., has placed on the market type WS, wide swing grinders designed to give maximum space around the wheels to provide working space for handling bulky pieces.

The machines are available with power units of from 2 to 7½ horsepower. These are totally enclosed and bearings sealed against the entrance of abrasive matter. On the 2 and 3 horsepower units, wheels are spaced on 30-inch centers and have a spindle 41 inches long.

CLEVELAND TRAMRAIL

MATERIALS HANDLING EQUIPMENT

• Planned Unit Loads — Reach back to the shipper of raw material. Steel for this plant is shipped in gondola cars, four solid piles of nine tons each, loaded end to end lengthwise of the car; delivered to the siding, at one end of which are five unloading stations. The Tramrail unloading trackage extends over this line of cars, which with necessary switches makes it possible to unload any one car independent of the others.

• The steel is unloaded and stored in "easy to pick up" one ton loads.

ALSO BUILDERS OF

CLEVELAND CRANES

FOR EVERY INDUSTRY

CLEVELAND TRAMRAIL

Division of

THE CLEVELAND CRANE & ENGINEERING CO.

1125 Depot St.

WICKLIFFE, OHIO

Or consult your phone directory under Cleveland Tramrail.

Reduces Sheet Damage

(*Concluded from Page* 48)

serves to facilitate loading and unloading operations. A further refinement of this method employs short spacer strips tacked in place between the 2 x 4's to maintain them in their original position.

This method of strapping adds nothing to the price of the steel. The bundles used by this company measure 34 inches wide by 100 long and have an average weight of about 5000 pounds.

Although Ohio Electric Mfg. Co. makes lifting magnets, it was some time before it realized that one could be used to do this job and save enough time, money and damage to pay a splendid dividend upon its cost. With the magnet shown in Fig. 2, one man unloaded 27 tons in 39 minutes including the time required to take the picture.

Weight of pack and size of magnet can be made to suit varying conditions such as capacity of hoist or crane. Magnet illustrated handles up to 12,000 pounds and was built by Ohio Electric Mfg. Co.

Fifth Committee Report Reviews Corrosion Work

■ *Fifth Report of Corrosion Committee;* cloth, 448 pages, 5¼ x 8½ inches; 89 illustrations and 194 tables; published by Iron and Steel institute, London; supplied by STEEL; in Europe by Penton Publishing Co. Ltd., Caxton House, Westminster, London.

This publication, designated as special report No. 21 of the British Iron and Steel institute, constitutes the report of a joint committee of the institute and the British Iron and Steel Federation to the Iron and Steel Industrial Research council. It was presented formally at the annual meeting of the institute, May 4-6.

Formed in 1928 to undertake an exhaustive study of corrosion, the committee has issued four previous reports in 1931, 1934, 1935 and 1936, respectively. In view of the detailed character of the committee's work, length of the fifth report was found to be unavoidable. Because the general reader probably will be most interested in some parts than other, a summary with page references is presented to give a reasoned survey of the contents.

The report is in six sections. Section A, which is introductory, gives the committee personnel, describes the present status of its work and summarizes conclusions reached thus far. Section B deals with field tests on atmospheric corrosion, in which connection many further quantitative results are given. Section C refers to the work on marine corrosion.

Work of the laboratory research subcommittee is described in section D, and includes six individual contributions submitted to the subcommittee. Section E constitutes the first report of the protective coatings subcommittee and includes three papers prepared by individual authors. Section F deals with various other matters considered or investigated by the committee.

Short Cut to Design In Civil Engineering

■ *Civil Engineering Design Types and Devices,* third edition, revised, by T. W. Barber; cloth, 254 pages, 5½ x 8¼ inches; published by Technical Press Ltd., London; supplied by STEEL, Cleveland, and in Europe by Penton Publishing Co. Ltd., Caxton House, Westminster, London, S.W. 1.

The author's object is the presentation in one volume of all the known devices, materials and methods used in civil engineering, set out in sketches, accompanied by brief description, classified to enable the engineer to make a selection easily.

The matter is not overloaded with detail, which every competent engineer will readily provide, once he has decided the basic lines of his design.

The sketches, numbering more than 1500, form an index of plant constructions, machines, materials, means and methods in use in civil engineering work of every class.

Develops New Valve For Soaking Pits

■ Following a 2-year test service of a new type mushroom valve on an ingot soaking pit in the Chicago district, this mill has equipped several additional furnaces with the new valves. Each valve weighs 80 pounds and replaces water-cooled, cast iron valves weighing approximately 800 pounds. The new valves are not water cooled. They were developed by American Manganese Steel division of American Brake Shoe & Foundry Co., Chicago Heights, Ill., and contain 26 to 28 per cent chromium and 10 to 13 per cent nickel. This alloy, known as Amsco F-10, resists corrosion, abrasion and oxidation while retaining considerable strength at temperatures up to 2100 degrees Fahr. The valves were 22 inches between seating rings and 24¾ inches in diameter outside of flanges. They are used as cast except for machining of the seating surfaces.

Offers Oil-Proof Belt

■ Manhattan Rubber Mfg. division of Raybestos-Manhattan Inc., Passaic, N. J., announces development of an oil-proof conveyor belt. It is especially suited for use with coke or coal which has oil sprayed on the fuel to allay dust. It also is used as a take-off belt in brick plants where kerosene is dropped on cutting wires directly over the belt.

For all Purposes
LESCHEN WIRE ROPE
ESTABLISHED 1857
"HERCULES" (RED STRAND) WIRE ROPE
A. Leschen & Sons Rope Co.
5909 Kennerly Avenue
ST. LOUIS, MO.
New York . . . 87 to 90 West Street
Chicago . . . 810 W. Washington Blvd.
Denver . . . . . 1554 Wazee Street
San Francisco . . . 520 Fourth Street
Round Strand
Flattened Strand "P. F. S."
Non-Rotating
Preformed
Steel Clad
Locked Coil
Regular Lay
Lang's Lay
Hemp Center
Wire Rope Center
Metallic Core
Seale - Filler Wire
Warrington

Wire Manufacture

(*Concluded from Page* 45)

in a warm dry place to age or "cure," to overcome the brittleness produced by the occlusion of hydrogen. Even fairly recently, some grades of high carbon wire have been baked for 12 to 24 and even 48 hours to remove traces of this brittleness. Now, through development of a flash baker, it is possible to bake wire and rods at almost unbelievable high temperatures, and for periods as brief as 20 seconds to 2 minutes, depending on the amount of lime, gage and carbon in the wire.

To accomplish this, air at 750 degrees Fahr. is forced at high pressure and velocity through the chamber in which the material is placed; a curtain of cold air at the top of this rectangular baking tank prevents loss of heat. Turbulence of the two air streams entering through opposite ends and meeting in the tank near the center of the tube-like mass of wire or rods drives out in the form of steam the moisture in the limed material with almost explosive violence. The combination of the high temperature and the violent removal of the moisture carries the offensive hydrogen along with it. A flash baker is shown in Fig. 4.

If the flash baking process, now admittedly in the pioneering stage, is generally accepted by wire manufacturers, much saving in time, labor and money will result. With use of this equipment, it is now possible, if necessary, to heat treat wire, pickle it, and draw it down to finished size all in one day. Whether or not this new method of drying and baking will revolutionize the pickling and baking of wire is a question which only the future can answer. General usage of pickling inhibitors bears powerful testimony as to the earnest effort being made to prevent hydrogen embrittlement and to improve pickling practice.

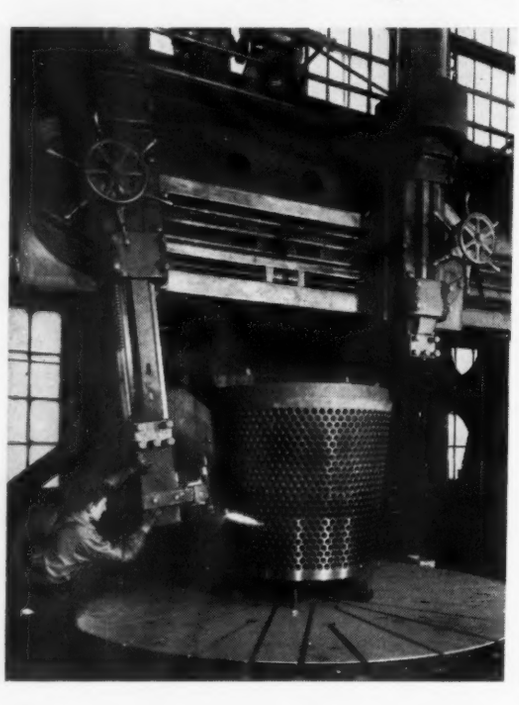
To save money in the handling of rods and wire in pickling, there is a growing tendency toward straight-line arrangement of all apparatus. This makes it possible to pass the unpickled material in at one end; move it in a linear sequence through the pickling tanks, wash tanks, lime tanks and baking operation; and to remove the cleaned wire at the other end. Such arrangement does away with the old fixed rotary crane with radially positioned tubs, is more flexible, and permits higher speed of operation.

A new application of automatic electric arc welding, using bare wire electrodes in large coils, recently has been developed and, it is claimed, will permit uninterrupted horizontal welding of large tanks, sections of tanks, boats, etc., over 100 feet in length. The process described by Hudson and Jackson at the 1937 spring meeting of the Society of Naval Architects and Marine Engineers, uses mineral compounds or mixtures which, it is stated, will conduct electric current when in a fused condition, and thereby create a resistance which provides heat for making the weld, the slag formed, protecting the weld metal from oxidation. The process has been described as a "resistance-fusion" type rather than an electric arc process, and is chiefly interesting to wire men as another use for bare electrode wire.

Another tool now used rather generally by the wiremaker is the spectrograph. Most large manufacturers and some of the smaller ones are finding this laboratory instrument valuable in discovering some of the inclusions or impurities which affect the quality of their steel and influence the properties of the finished wire. This instrument is a quick responding tool, and by its use, hours of laborious chemical work can be eliminated.

It is interesting to note the number of wire manufacturers who are relying upon the facilities of a modern research laboratory to insure the quality of their product. Most large wire plants have their own research departments; those which "cure," to overcome the brittleness amount of lime, gage and carbon the two air streams entering through possible, if necessary, to heat-treat the slag formed, protecting the weld is a quick responding tool, and by its use, hours of laborious chemical necessary.

Grinds Edges of 1826 Holes



■ **Here a 43-inch cast iron strainer core is being finish ground to perfect taper with a mirror-like finish in a special setup using a 16-foot boring mill and a Dumore No. 12 grinder at Love Bros., Aurora, Ill. Wheel, wheel speed and feed had to be exactly right to avoid wheel dressing effect caused by large number of holes**

Prints Booklet "Notched Bar Impact Testing"

■ The Manchester Association of Engineers, St. John Street Chambers, Deansgate, Manchester, 3, England, has available a 230-page discussion on "Notched Bar Impact Testing," reprinted from transactions of the association.

It contains four papers, "Impact Testing from a Physical Standpoint," "Some Aspects of the Notched Bar Test," "Development and Present Position of Continental Research on the Notched Bar Impact Test," "Discussion of the Impact Test," a discussion of these papers and replies by the authors.

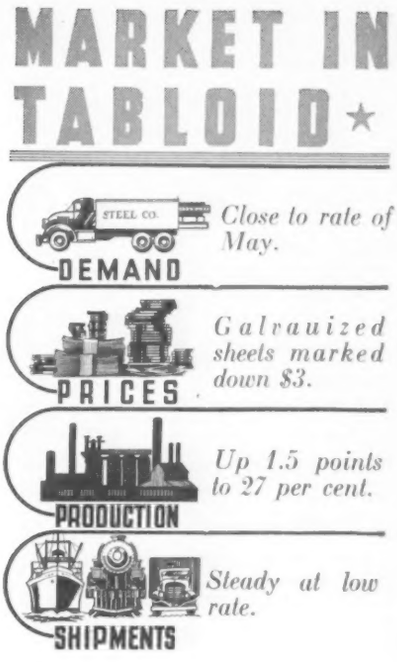
Improves Brazing Metal

■ Fansteel Metallurgical Corp., North Chicago, Ill., announces a new brazing metal and flux for brazing dissimilar metals or alloys, especially under the condition where the brazed joint is subject to heavy loads. Called Fanite and Fanflux, they are especially recommended for brazing tipped carbide or hard metal cutting tools.

In addition to unusual strength, Fanite holds a plastic stage as it cools for a time interval sufficient to alloy the contraction of dissimilar metals to reach a normal stage thus preventing formation of strain in the brazed joint, it is claimed.

Some Signs of Better Summer Steel Demand

Galvanized Off $3; Scrap Is Steady; Autos in Gain



■ WITHOUT definite evidence beyond a slight increase in operating rate and strengthening in the price of steelmaking scrap, belief is growing that the steel market has touched bottom and the first indications of the expected late summer revival are being felt.

Consumers have worked off inventories sufficiently to make current buying almost entirely for rush delivery, indicating the steel is going into consumption immediately. Only slight quickening of demand is needed to cause larger commitments.

Meanwhile, heavy tonnages continue to pile up for later specification, requirements for naval and merchant ships, part of which have been placed and part pending; considerable highway and bridge steel projects and some steel for railroad car building. Adjournment of congress without giving financial aid to the carriers makes the latter situation likely to yield less business than had been expected.

Closing of the 1938 model season by the automotive industry indicates early start on 1939 models and buying for first runs are likely to start within a short time. Government spending is being put under way as rapidly as possible and should include sufficient steel to help the situation.

Increased activity at about half the steelmaking centers, led by a substantial rise at Pittsburgh, caused the national operating rate to advance 1.5 points to 27 per cent last week, with a further increase this week forecast in some instances. Pittsburgh advanced 4 points to 23.3 per cent, Eastern Pennsylvania ½ point to 26, Buffalo 5 points to 28, Cincinnati 12 points to 28, Detroit 3 points to 21 and Youngstown 2 points to 27. Wheeling was the only center to show a loss, dropping 3 points to 35 per cent. No change was made at Chicago at 22, Birmingham at 58, New England at 25, St. Louis at 39.3 and Cleveland at 31.

Led by an award of 12,000 tons for an office building in New York, structural needs show some signs of increasing, though by far the largest portion is for public purposes. A railroad machine shop in Massachusetts has been awarded, calling for 1200 tons. Among pending business are 11,000 tons of steel sheet piling for the United States engineer at Los Angeles on which identical bids are being considered, 7000 tons for a subway section in Brooklyn, 4500 tons for a bridge for the District of Columbia and 4284 tons of bridge steel for the state of Oklahoma.

Formal announcement by several producers of galvanized sheets of a reduction of $3 per ton effective immediately and for third quarter, has not yet become general, though practically all sellers are quoting no higher. The reduction was said to be to meet competition, which has been unusually severe in this product. It is understood a new set of discounts and allowances is being considered by some important makers, to be announced later.

Automobile production gained slightly last week to 41,790, compared with 40,175 the preceding week and 111,620 in the week ended June 19, 1937. General Motors assembled 18,175, compared with 17,700; Chrysler held steady at 6195; Ford produced 11,810, compared with 11,775; independents made 5610, compared with 4505 the week before.

Better feeling is being manifested in the scrap market, not yet resulting in buying but caused by scarcity of material and reluctance of holders to sell at the present level. Some of this sentiment may result from foreign buying but other factors are active in giving strength. Dealers believe the bottom has been reached and that some rise in prices is certain to follow any buying of tonnages.

Although sentiment in steelmaking scrap is stronger in most centers a slight dip at Chicago served to reduce the composite price 8 cents, to $10.63. The iron and steel composite is unchanged at $38.38. The finished steel composite at $61.40, was 30 cents lower, due to a $3 reduction in galvanized sheets.

Great Britain is adjusting to her smaller market requirements and in May reduced pig iron output while increasing steel ingot output. Both imports and exports were lower than in April. Production of steel ingots in May was 957,000 tons, which is fairly close to the high record maintained for the past few months.

Formal renewal of the European steel entente on the same terms as formerly has a stabilizing effect on world markets.

COMPOSITE MARKET AVERAGES

	June 18	June 11	June 4	One Month Ago May, 1938	Three Months Ago March, 1938	One Year Ago June, 1937	Five Years Ago June, 1933
Iron and Steel	$38.38	$38.38	$38.38	$38.50	$38.80	$39.82	$28.71
Finished Steel	61.40	61.70	61.70	61.70	61.70	61.70	45.30
Steelworks Scrap..	10.63	10.71	10.75	11.47	13.20	17.15	9.55

Iron and Steel Composite:—Pig iron, scrap, billets, sheet bars, wire rods, tin plate, wire, sheets, plates, shapes, bars, black pipe, rails, alloy steel, hot strip, and cast iron pipe at representative centers. Finished Steel Composite:—Plates, shapes, bars, hot strip, nails, tin plate, pipe. Steelworks Scrap Composite:—Heavy melting steel and compressed sheets.

COMPARISON OF PRICES

Representative Market Figures for Current Week; Average for Last Month, Three Months and One Year Ago

Finished Material

	June 18, 1938	May 1938	March 1938	June 1937
Steel bars, Pittsburgh	2.45c	2.45c	2.45c	2.45c
Steel bars, Chicago	2.50	2.50	2.50	2.50
Steel bars, Philadelphia	2.77	2.75	2.75	2.74
Iron bars, Terre Haute, Ind.	2.35	2.35	2.35	2.35
Shapes, Pittsburgh	2.25	2.25	2.25	2.25
Shapes, Philadelphia	2.465	2.465	2.465	2.455
Shapes, Chicago	2.30	2.30	2.30	2.30
Tank plates, Pittsburgh	2.25	2.25	2.25	2.25
Tank plates, Philadelphia	2.445	2.445	2.445	2.435
Tank plates, Chicago	2.30	2.30	2.30	2.30
Sheets, No. 10, hot rolled, Pitts.	2.40	2.40	2.40	2.40
Sheets, No. 24, hot ann., Pitts.	3.15	3.15	3.15	3.15
Sheets, No. 24, galv., Pitts.	3.65	3.80	3.80	3.80
Sheets, No. 10, hot rolled, Gary	2.50	2.50	2.50	2.50
Sheets, No. 24, hot anneal., Gary	3.25	3.25	3.25	3.25
Sheets, No. 24, galv., Gary	3.75	3.90	3.90	3.90
Bright bess., basic wire, Pitts.	2.90	2.90	2.90	2.90
Tin plate, per base box, Pitts.	$5.35	$5.35	$5.35	$5.35
Wire nails, Pittsburgh	2.75	2.75	2.75	2.75

Semifinished Material

Sheet bars, open-hearth, Youngs.	$37.00	$37.00	$37.00	$37.00
Sheet bars, open-hearth, Pitts.	37.00	37.00	37.00	37.00
Rerolling billets, Pittsburgh	37.00	37.00	37.00	37.00
Wire rods, No. 5 to $\frac{9}{32}$-inch, Pitts.	47.00	47.00	47.00	47.00

Pig Iron

	June 18, 1938	May 1938	March 1938	June 1937
Bessemer, del. Pittsburgh	$25.34	$25.34	$25.26	$25.26
Basic, Valley	23.50	23.50	23.50	23.50
Basic, eastern del., Philadelphia	25.34	25.34	25.34	25.26
No. 2 foundry, Pittsburgh	25.21	25.21	25.21	25.21
No. 2 foundry, Chicago	24.00	24.00	24.00	24.00
Southern No. 2, Birmingham	20.38	20.38	20.38	20.38
Southern No. 2, del. Cincinnati	23.89	23.89	23.89	23.69
No. 2X eastern, del. Philadelphia	26.215	26.215	26.215	26.135
Malleable Valley	24.00	24.00	24.00	24.00
Malleable, Chicago	24.00	24.00	24.00	24.00
Lake Sup., charcoal, del. Chicago	30.34	30.34	30.24	30.04
Gray forge, del. Pittsburgh	24.17	24.17	24.17	24.17
Ferromanganese, del. Pittsburgh	107.77	107.77	107.49	107.29

Scrap

Heavy melting steel, Pittsburgh	$11.25	$11.55	$13.65	$18.40
Heavy melt. steel, No. 2, E. Pa.	9.75	10.00	12.75	15.25
Heavy melting steel, Chicago	9.75	11.05	12.20	16.00
Rails for rolling, Chicago	14.75	14.85	15.25	19.50
Railroad steel specialties, Chicago	13.25	13.60	14.25	19.50

Coke

Connellsville, furnace, ovens	$3.75	$4.25	$4.25	$4.65
Connellsville, foundry, ovens	5.00	5.25	5.25	5.30
Chicago, by-product foundry, del.	11.00	11.00	11.00	11.00

STEEL, IRON, RAW MATERIAL, FUEL AND METALS PRICES

Except when otherwise designated, prices are base, f.o.b. cars.

Sheet Steel

Base prices, subject to new extras and deductions, effective to Sept. 30, 1938.

Hot sheet, strip, Pitts.	2.30c
Do., Gary	2.40c
Tin mill black, Pitts.	3.30c
Do., Gary	3.40c
Cold-rolled sheets, Pitts.	3.35c
Do., Gary	3.45c
Cold-roll. strip, Pitts.	3.10c
Do., Worcester, Mass.	3.30c

Prices below also apply until June 30, with old extras and deductions, if giving lower net price.

Hot Rolled No. 10, 24-48 in.

Pittsburgh	2.40c
Gary	2.50c
Chicago, delivered	2.53c
Detroit, del.	2.60c
New York, del.	2.76c
Philadelphia, del.	2.72c
Birmingham	2.47½c
St. Louis, del.	2.63c
Granite City, Ill.	2.60c
Pac. base pts. f.o.b. cars, dock,	2.95c

Galvanized No. 24

Pittsburgh	3.65c
Gary	3.75c
Chicago, delivered	3.78c
Philadelphia, del.	3.97c
New York, delivered	4.01c
Birmingham	3.80c
St. Louis, del.	3.88c
Granite City, Ill.	3.85c
Pac. base pts. f.o.b. cars, dock	4.25c

Tin Mill Black No. 28

Pittsburgh	3.30c
Gary	3.40c
St. Louis, delivered	3.53c
Granite City, Ill.	3.50c

Cold Rolled No. 10

Pittsburgh	3.00c
Gary	3.10c
Detroit, delivered	3.20c
Philadelphia, del.	3.32c
New York, del.	3.36c
St. Louis, del.	3.23c
Granite City, Ill.	3.20c
Pac. base pts. f.o.b. cars, dock,	3.60c

Cold Rolled No. 20

Pittsburgh	3.45c
Gary	3.55c
Detroit, delivered	3.65c
Philadelphia, del.	3.77c
New York, del.	3.81c
St. Louis	3.68c
Granite City, Ill.	3.65c

Long Ternes No. 24 Unassorted

Pittsburgh	4.10c
Gary	4.20c

Enameling Sheets

	No. 10	No. 20
Pittsburgh	2.90c	3.50c
Gary	3.00c	3.60c
Granite City, Ill.	3.10c	3.70c

Tin and Terne Plate

Gary base, 10 cents higher

Tin plate, coke (base box) Pittsburgh	$5.35
Mfg. terne plate, Pittsburgh	4.65c
Gary	4.75c
Granite City	4.85c

Corrosion and Heat-Resistant Alloys

Pittsburgh base, cents per lb.

Chrome-Nickel

	No. 302	No. 304
Bars	24.00	25.00
Plates	27.00	29.00
Sheets	34.00	36.00
Hot strip	21.50	23.50
Cold strip	28.00	30.00

Straight Chromes

	No. 410	No. 430	No. 442	No. 446
Bars	18.50	19.00	22.50	27.50
Plates	21.50	22.00	25.50	30.50
Sheets	26.50	29.00	32.50	36.50
Hot strip	17.00	17.50	23.00	28.00
Cold stp.	22.00	22.50	28.50	36.50

Steel Plate

Pittsburgh	2.25c
New York, del.	2.55c
Philadelphia, del.	2.44½c
Boston, delivered	2.68c
Buffalo, delivered	2.49½c
Chicago or Gary	2.30c
Cleveland, del.	2.45½c
Birmingham	2.40c
Coatesville, base	2.35c
Sparrows Pt., base	2.35c
St. Louis, delivered	2.54c
Gulf ports	2.65c
Pacific basing points, f.o.b. cars, dock,	2.80c
Do. floor plates	4.05c

Standard Shapes

Pittsburgh	2.25c
Philadelphia, del.	2.46½c
New York, del.	2.52c
Boston, delivered	2.66c
Bethlehem	2.35c
Chicago	2.30c
Cleveland, del.	2.46c
Buffalo, delivered	2.37½c
Gulf ports	2.65c
Birmingham	2.40c
St. Louis, del.	2.54c
Pacific coast basing pts., f.o.b. cars dock,	2.80c

Bars

Soft Steel

(Base, 3 to 25 tons)

Pittsburgh	2.45c
Chicago or Gary	2.50c
Duluth	2.60c
Birmingham	2.60c
Cleveland	2.50c
Buffalo	2.55c
Detroit, delivered	2.60c
Philadelphia, del.	2.77c
Boston, delivered	2.89c
New York, del.	2.81c
Gulf ports	2.85c
Pacific coast basing pts., f.o.b. cars, dock,	3.00c

Rail Steel

To Manufacturing Trade

Pittsburgh	2.30c
Chicago or Gary	2.35c
Detroit, delivered	2.45c
Cleveland	2.35c
Moline, Ill.	2.35c

Buffalo, delivered 2.37½c
Birmingham 2.45c
Gulf ports 2.70c

Iron

Terre Haute, Ind. 2.35c
Chicago 2.40c
Philadelphia 2.67c
Pittsburgh, refined...3.50-8.00c

Reinforcing

New billet, straight lengths, quoted by distributors
Pittsburgh 2.45c
Chicago, Gary, Buffalo, Cleve., Birm., Young... 2.50c
Gulf ports 2.85c
Pacific coast ports, f.o.b. car docks 2.95c
Philadelphia, del. 2.77c
Rail steel, straight lengths, quoted by distributors
Pittsburgh 2.30c
Chicago, Buffalo, Cleveland, Birm., Young.... 2.35c
Gulf ports 2.70c

Wire Products

Prices apply to mixed carloads, base; less carloads subject to quantity extras.

Base Pitts.-Cleve. 100 lb. keg.
Standard wire nails $2.75
Cement coated nails $2.75
(Per pound)
Polished staples 3.45c
Galv. fence staples 3.70c
Barbed wire, galv. 3.40c
Annealed fence wire.... 3.15c
Galv. fence wire..... 3.55c
Woven wire fencing (base C. L. column)..... $74.00
Single loop bale ties, (base C. L. column).. $63.00

To Mfg. Trade, base Pitts.-Cleve.

Bright bess., basic wire 2.90c
Galvanized wire 2.95c
Spring wire 3.50c

On above wire items, Anderson, Ind. (merchant products only) and Chicago prices 5 cents per 100 lbs. higher; Duluth (except spring wire) and Worcester up 10 cents, Birmingham (except spring wire) up 15 cents; Pacific coast up 45 cents.

Cut nails, C. L. Pitts. (10% disc. on all extras) $3.60

Cold-Finished Carbon Bars, Shafting

Pittsburgh 2.90c
Chicago 2.95c
Gary, Ind. 2.95c
Detroit 2.95c
Cleveland 2.95c
Buffalo 3.00c

Subject to quantity deductions and extras. List dated Aug. 26, 1935; revised Oct. 1, 1936.

Alloy Bars (Hot)

(*Base, 3 to 25 tons*)

Pittsburgh, Buffalo, Chicago, Massillon, Canton, Bethlehem 3.00c

S.A.E.	Alloy Diff.	S.A.E.	Alloy Diff.
2000	0.35	3100	0.70
2100	0.75	3200	1.35
2300	1.55	3300	3.80
2500	2.25	3400	3.20

4100 0.15 to 0.25 Mo. 0.55
4600 0.20 to 0.30 Mo. 1.50-2.00 Ni. 1.10
5100 0.80-1.10 Cr. 0.45
5100 Cr. spring flats..... 0.15
6100 bars 1.20
6100 spring flats 0.85
Cr. N., Van. 1.50
Carbon Van. 0.85
9200 spring flats 0.15
9200 spring rounds, squares 0.40
Electric furnace up 50 cents.

Piling

Pittsburgh 2.60c
Chicago, Buffalo 2.70c
Gulf and Pac. coast ports 3.05c

Strip and Hoops

(Base, hot-rolled, 1 to 25 tons; cold-rolled, 3 to 25 tons)

Hot strip to 23⅛-in.
Pittsburgh 2.40c
Chicago or Gary 2.50c
Birmingham base 2.47½c
Detroit, del. 2.60c
Philadelphia, del. 2.72c
New York, del. 2.76c
Cooperage hoop,
Pittsburgh 2.40c
Chicago 2.50c
Cold strip, 0.25 carbon and under, Pittsburgh, Cleveland 3.10c
Detroit, del. 3.41c
Worcester, Mass. 3.30c

Carbon	Cleve. Pitts.	Worcester, Mass.
0.26—0.50...	3.10c	3.30c
0.51—0.75...	4.45c	4.65c
0.76—1.00...	6.30c	6.50c
Over 1.00...	8.50c	8.70c

Commodity Cold-Rolled Strip
Pitts.-Cleve. 3.25c
Worcester 3.65c
Lamp stock up 10 cents.

Rails, Fastenings

(Gross Tons)

Standard rails, mill..... $42.50
Relay rails, Pittsburgh 20—100 lbs. 32.50-35.50
Light rails, billet qual., Pittsburgh, Chicago... $43.00
Do., rerolling quality.. 42.00
Angle bars, billet, mills 2.80c
Do., axle steel 2.35c
Spikes, R. R. base 3.15c
Track bolts, base 4.35c
Car axles forged, Pitts., Chgo., B'ham. 3.35c
Tie plates, base $46.00
Base, light rails 25 to 60 lbs.; 20 lbs. up $2; 16 lbs. up $4; 12 lbs. up $8; 8 lbs. up $10. Base railroad spikes 200 kegs or more; base plates 20 tons.

Bolts and Nuts

Pittsburgh, Cleveland, Birmingham, Chicago. Discounts to legitimate trade as per Dec. 1, 1932, lists, carloads 5% up:

Carriage and Machine

½ x 6 and smaller.....65-5 off
Do. larger, to 1-in....60-10 off
Do. 1⅛ and larger....60-5 off
Tire bolts .....50 off

Stove Bolts

In packages with nuts attached 70 off; in packages with nuts separate 70-10 off; in bulk 80 off on 15,000 of 3-inch and shorter, or 5000 over 3-inch.
Step bolts .....50-10-5 off
Elevator bolts .....50-10-5 off

Nuts

Semifinished hex.; ½-in. and smaller .....60-10 off
Do., ⅞ to 1-inch.....60-5 off
Do., over 1-inch.....60 off

Hexagon Cap Screws

Milled .....50-10 off
Upset, 1-in., smaller ...70-5 off

Square Head Set Screws

Upset, 1-in., smaller ....80-5 off
Headless set screws.....75 off

Rivets, Washers

Structural, Pittsburgh, Cleveland 3.60c
Structural, Chicago 3.70c
⅞-inch and smaller, Pitts., Chi., Cleve.....65-5 off
Wrought washers, Pitts., Chi., Phila. to jobbers and large nut, bolt mfrs. l.c.l. $5.40; c.l. $5.75 off Do., less carloads, 5 kegs or more, no discount on any extras.. $3.90
Do., under 5 kegs no disc. on any extras... $4.05

Welded Iron, Steel Pipe

Base discounts on steel pipe. Pitts., Lorain, O., to consumers in carloads. Gary, Ind., 2 points less. Chicago, del. 2½ less. Wrought pipe, Pittsburgh.

Butt Weld

Steel

In.	Blk.	Galv.
⅛	59½	49
¼	62½	53
1—3	64½	55½

Iron

¼	26	8
1—1¼	30	14
1½	34	16½
2	33½	16

Lap Weld

Steel

2	57	47½
2½—3	60	50½
3½—6	62	52½
7 and 8	61	50½
9 and 10	60½	50
11 and 12	59½	49

Iron

2	26½	10
2½—3½	27½	12½
4	29½	16
4½—8	28½	15
9—12	24½	10

Line Pipe

Steel

1 to 3, butt weld	63½
2, lap weld	56
2½ to 3, lap weld	59
3½ to 6, lap weld	61
7 and 8, lap weld	60
10-inch lap weld	59½
12-inch, lap weld	58½

Iron

	Blk.	Galv.
¾ butt weld	25	7
1 and 1¼ butt weld	29	13
1½ butt weld	33	15½
2 butt weld	32½	15
1½ lap weld	23½	7
2 lap weld	25½	9
2½ to 3½ lap weld	26½	11½
4 lap weld	28½	15
4½ to 8 lap weld..	27½	14
9 to 12 lap weld ..	23½	9

Boiler Tubes

Carloads minimum wall seamless steel boiler tubes, cut lengths 4 to 24 feet, f.o.b. Pittsburgh, base price per 100 feet subject to usual extras.

Lap Weld

Sizes	Steel	Charcoal Iron
1½" OD x 13 Ga..	$10.45	$23.71
1¾" OD x 13 Ga..	11.89	22.93
2" OD x 13 Ga....	13.31	19.35
2" OD x 11 Ga....	15.49	23.36
2¼" OD x 13 Ga..	14.82	21.68
2¼" OD x 11 Ga..	17.38	26.02
2½" OD x 12 Ga..	17.82	26.57
2¾" OD x 12 Ga..	18.86	29.00
3" OD x 12 Ga....	19.73	31.36
3½" OD x 11 Ga..	24.89	39.81
4" OD x 10 Ga....	30.81	49.90
5" OD x 9 Ga.....	47.57	73.93
6" OD x 7 Ga.....	73.25	....

Seamless

	Hot Rolled	Cold Drawn
1" OD x 13 Ga....	$ 8.41	$ 9.46
1¼" OD x 13 Ga..	9.96	11.21
1½" OD x 13 Ga..	11.00	12.38
1¾" OD x 13 Ga..	12.51	14.09
2" OD x 13 Ga....	14.02	15.78
2¼" OD x 13 Ga..	15.63	17.60
2¼" OD x 12 Ga..	17.21	19.37
2½" OD x 12 Ga..	18.89	21.22
2¾" OD x 12 Ga..	19.98	22.49
3" OD x 12 Ga....	20.97	23.60
4½" OD x 10 Ga..	40.15	45.19
3½" OD x 11 Ga..	26.47	29.79
4" OD x 10 Ga....	32.83	36.94
5" OD x 9 Ga.....	50.38	56.71
6" OD x 7 Ga.....	77.35	87.07

Cast Iron Pipe

Class B Pipe—Per Net Ton

6-in., & over, Birm..$46.00-47.00
4-in., Birmingham.. 49.00-50.00
4-in., Chicago 57.80-58.80
6 to 24-in., Chicago. 54.80-55.80
6-in. & over, east fdy. 50.00
Do., 4-in. 53.00
Class A Pipe $3 over Class B
Stnd. fitgs., Birm., base $100.00

Semifinished Steel

Billets and Blooms

Rerolling Quality

4 x 4-inch base; gross ton

Pitts., Chi., Cleve., Buffalo, Young., Birm.....$37.00
Philadelphia 42.83
Duluth 39.00

Forging Quality Billets

6 x 6 to 9 x 9-in., base

Pitts., Chicago, Buffalo... 43.00
Forging, Duluth 45.00

Sheet Bars

Pitts., Cleveland, Young., Sparrows Point, Buffalo, Canton, Chicago.. 37.00

Slabs

Pitts., Chicago, Cleveland, Youngstown 37.00

Wire Rods

Pitts., Cleveland, No. 5 to ⅝-inch incl..... 47.00
Do., over ⅝ to 47/64-in. incl. 52.00
Chicago, Anderson, Youngstown, up $1; Worcester up $2; Birmingham up $3; Galveston up $6; Pacific coast up $9.

Skelp

Pitts., Chi., Young., Buff., Coatesville, Sparrows Pt. 2.10c.

Coke

Price Per Net Ton

Beehive Ovens

Connellsville, fur.... $3.75
Connellsville, fdry... 4.75- 5.50
Connell. prem. fdry. 5.75- 6.25
New River fdry..... 6.50- 6.75
Wise county fdry... 5.50- 5.75
Wise county fur.... 4.50- 4.75

By-Product Foundry

Newark, N. J., del... 10.88-11.35
Chi., ov., outside del. 10.25
Chicago, del 11.00
Milwaukee, ovens.. 11.00
New England, del... 12.50
St. Louis, del. 11.00-11.50
Birmingham, ovens. 7.50
Indianapolis, del. .. 10.5c
Cincinnati, del..... 10.50
Cleveland, del. 11.05
Buffalo, del. 10.50
Detroit, del. 11.10
Philadelphia, del.... 10.65

Coke By-Products

Spot, gal. Producers' Plants
Pure and 90% benzol.... 16.00c
Toluol, two degree..... 22.00c
Solvent naphtha 26.00c
Industrial xylol 26.00c
Per lb. f.o.b. Frankford and St. Louis
Phenol (200 lb. drums).. 16.25c
Do. (450 lbs.) 15.25c
Eastern Plants, per lb.
Naphthalene flakes, balls, bbls. to jobbers..... 6.75c
Per ton, bulk, f.o.b. oven or port
Sulphate of ammonia... $29.50

Pig Iron

Delivered prices include switching charges only as noted. No. 2 foundry is 1.75-2.25 sil.; 25c diff. for each 0.25 sil. above 2.25 sil.; 50c diff. below 1.75 sil. Gross tons.

Basing Points:	No. 2 Fdry.	Malleable	Basic	Bessemer
Bethlehem, Pa.	$25.00	$25.50	$24.50	$26.00
Birdsboro, Pa.	25.00	25.50	24.50	26.00
Birmingham, Ala.‡	20.38	.....	19.38	25.00
Buffalo	24.00	24.50	23.00	25.00
Chicago	24.00	24.00	23.50	24.50
Cleveland	24.00	24.00	23.50	24.50
Detroit	24.00	24.00	23.50	24.50
Duluth	24.50	24.50	.....	25.00
Erie, Pa.	24.00	24.50	23.50	25.00
Everett, Mass.	25.75	26.25	25.25	26.75
Granite City, Ill.	24.00	24.00	23.50	24.50
Hamilton, O.	24.00	24.00	23.50	.....
Neville Island, Pa.	24.00	24.00	23.50	24.50
Provo, Utah	22.00	.....	.....	.....
Sharpsville, Pa.	24.00	24.00	23.50	24.50
Sparrow's Point, Md.	25.00	.....	24.50	.....
Swedeland, Pa.	25.00	25.50	24.50	26.00
Toledo, O.	24.00	24.00	23.50	24.50
Youngstown, O.	24.00	24.00	23.50	24.50

‡Subject to 38 cents deduction for 0.70 per cent phosphorus or higher.

Delivered from Basing Points:	No. 2 Fdry.	Malleable	Basic	Bessemer
Akron, O., from Cleveland	25.39	25.39	24.89	25.89
Baltimore from Birmingham	25.78	.....	24.66	.....
Boston from Birmingham	25.87	.....	.....	.....
Boston from Everett, Mass.	26.25	26.75	25.75	27.25
Boston from Buffalo	26.25	26.75	25.75	27.25
Brooklyn, N. Y., from Bethlehem	27.50	28.00	.....	.....
Canton, O., from Cleveland	25.39	25.39	24.89	25.89
Chicago from Birmingham	†24.22	.....	.....	.....
Cincinnati from Hamilton, O.	24.44	25.11	24.78	.....
Cincinnati from Birmingham	24.06	.....	23.06	.....
Cleveland from Birmingham	24.32	.....	23.82	.....
Mansfield, O., from Toledo, O.	25.94	25.94	25.44	25.44
Milwaukee from Chicago	25.10	25.10	24.60	25.10
Muskegon, Mich., from Chicago, Toledo or Detroit	27.19	27.19	26.69	27.69
Newark, N. J., from Birmingham	26.15	...	.....	.....
Newark, N. J., from Bethlehem	26.53	27.03	.....	.....
Philadelphia from Birmingham	25.46	.....	24.96	.....
Philadelphia from Swedeland, Pa.	25.84	26.34	25.34	.....
Pittsburgh district from Neville Island	Neville base, plus 69c, 84c, and $1.24 freight.			
Saginaw, Mich., from Detroit	26.45	26.45	25.95	25.95

	No. 2 Fdry.	Malleable	Basic	Bessemer
St. Louis, northern	24.55	24.55	24.05	.....
St. Louis from Birmingham	†24.12	.....	23.82	.....
St. Paul from Duluth	26.08	26.08	.....	26.58

†Over 0.70 phos.

Low Phos.

Basing Points: Birdsboro and Steelton, Pa., and Standish, N. Y., $28.50, Phil. base, standard and copper bearing, $29.63.

Gray Forge		Charcoal	
Valley furnace	$23.50	Lake Superior fur.	$27.00
Pitts. dist. fur.	23.50	do., del. Chicago	30.34
		Lyles, Tenn.	26.50

Silvery†

Jackson county, O., base: 6-6.50 per cent $28.50; 6.51-7—$29.00; 7-7.50—$29.50; 7.51-8—$30.00; 8-8.50—$30.50; 8.51-9—$31.00; 9-9.50—$31.50; Buffalo $1.25 higher.

Bessemer Ferrosilicon†

Jackson county, O., base: Prices are the same as for silveries, plus $1 a ton.

†The lower all-rail delivered price from Jackson, O., or Buffalo is quoted with freight allowed.

Manganese differentials in silvery iron and ferrosilicon, 2 to 3%, $1 per ton add. Each unit over 3%, add $1 per ton.

Refractories

Per 1000 f.o.b. Works, Net Prices

Fire Clay Brick

Super Quality

Pa., Mo., Ky.	$60.80

First Quality

Pa., Ill., Md., Mo., Ky.	47.50
Alabama, Georgia	47.50
New Jersey	52.50

Second Quality

Pa., Ill., Ky., Md., Mo.	42.75
Georgia, Alabama	34.20
New Jersey	49.00

Ohio

First quality	39.90
Intermediate	36.10
Second quality	31.35

Malleable Bung Brick

All bases	$56.05

Silica Brick

Pennsylvania	$47.50
Joliet, E. Chicago	56.05
Birmingham, Ala.	47.50

Ladle Brick

(Pa., O., W. Va., Mo.)

Dry press	$28.00
Wire cut	$26.00

Magnesite

Imported dead-burned grains, net ton f.o.b. Chester, Pa., and Baltimore bases (bags)	$45.00
Do. domestic	40.00
Do., f.o.b. Chewelah, Wash., net ton, bulk	22.00
net ton, bags	26.00
Quickset magnesite grains, f.o.b. Chewelah, Wash., net ton, bulk	22.00

Basic Brick

Net ton, f.o.b. Baltimore, Plymouth Meeting, Chester, Pa.

Chrome brick	$47.00
Chem. bonded chrome	47.00
Magnesite brick	67.00
Chem. bonded magnesite	57.00

Fluorspar, 85-5

Washed gravel, duty paid, tide, net ton	$23.50-24.00
Washed gravel, f.o.b. Ill., Ky., net ton, carloads, all rail $20, barge	$22.00
No. 2 lump	22.00-23.00

Ferroalloy Prices

Ferromanganese, 78-82%, tidewater, duty pd. $102.50
Do., del. Pittsburgh 107.77

Spiegeleisen, 19-21% dom. Palmerton, Pa., spot 33.00
Do., New Orleans 33.00
Do., 26-28%, Palmerton 39.00

Ferrosilicon, 50% freight allowed, c.l. 69.50
Do., ton lot 80.50
Do., 75 per cent 126.00
Spot, $5 a ton higher.

Silicoman., 2½ carbon 106.50
2% carbon 111.50 1%, 121.50
Contract ton price $11 higher; spot $5 over contract.

Ferrotungsten, stand., lb. con. del. cars 1.70-1.75

Ferrovanadium, 35 to 40%, lb., cont. 2.70-2.80

Ferrotitanium, c. l., prod-plant, frt. all., net ton 142.50
Contract, ton lots 145.00
Spot, ton lots 150.00

Ferrophosphorus, per ton, c.l., 17-18% Rockdale, Tenn., basis, 18%, $3 unitage, 58.50; electrolytic, per ton, c. l., 23-26% f.o.b. Monsanto, Tenn., 24% $3 unitage 75.00

Ferrochrome, 66-70 chromium, 4-6 carbon, cts. lb. del. carlots 10.50
Do., ton lots 11.25c
Do., less-ton lots 11.50c

67-72% carloads, 2% carbon, per lb. contained chrome 16.50c
Do., ton lots 17.25c
Do., less-ton lots 17.50c

	Carloads	Ton lots	Less ton
2% carb.	16.50c	17.25c	17.50c
1% carb.	17.50c	18.25c	18.50c
0.10% carb.	18.50c	19.25c	19.50c
0.20% carb.	19.50c	20.25c	20.50c

Spot ¼c higher

Ferromolybdenum, 55-65% molyb. cont., f.o.b. mill, lb. 0.95

Calcium molybdate, lb. molyb. cont., f.o.b. mill 0.80

Ferrotitanium, 40%, lb. con. ti., ton lots $1.23
Do, less-ton lots 1.25
20-25% carbon, 0.10 max., ton lots, lb. 1.35
Do, less-ton lots 1.40
Spot 5c higher

Ferrocolumbium, 50-55%, contract, lb. con. col., f.o.b. Niagara Falls $2.25
Do, less-ton lots 2.30
Spot is 10c higher

Technical molybdenum trioxide, 53 to 60% molybdenum, lb. molyb. cont., f.o.b. mill 0.80

Ferro-carbon-titanium, 15-18%, ti., 6-8% carb., carlots, contr., net ton $142.50
Do, spot 145.00
Do, contract, ton lots 145.00
Do, spot, ton lots 150.00

15-18% ti., 3-5% carbon, carlots, contr., net ton 157.50
Do, spot 160.00
Do, contract, ton lots 160.00
Do, spot, ton lots 165.00

Alsifer, contract carlots, f.o.b. Niagara Falls, lb. 7.50c
Do, ton lots 8.00c
Do, less-ton lots 8.50c
Spot ½c lb. higher

Chromium Briquets, contract carloads, f.o.b. Niagara Falls, lb. 7.25c
Do, spot carlots, bulk 7.50c
Do, ton lots 8.00c
Do, less-ton lots 8.50c

Tungsten Metal Powder, according to grade, spot shipment, 200-lb. drum lots, lb. $2.80
Do, smaller lots 3.00-3.10

Vanadium Pentoxide, contract, lb. contained $1.10
Do, spot 1.15

Chromium Metal, 98% cr., 0.50 carbon max., contract, lb. con. chrome 80.00c
Do, spot 85.00c
88% chrome, contract 79.00c
Do, spot 84.00c

Silicon Metal, 1% iron, contract, lb. 14.50c
Do, 2% 13.00c
Spot ¼c higher

Silicon Briquets, contract, carloads, f.o.b. Niagara Falls, ton $74.00
Do, spot 79.00
Less-ton lots, lb. 4.25c

Manganese Briquets, contract carloads, f.o.b. Niagara Falls, lb. 5.00c
Ton lots 5.50c
Less-ton lots 5.75c
Spot ¼c higher

Zirconium Alloy, 12-15%, carloads, gross ton $97.50
Do, spot 102.50
34-40%, contract, carloads, lb., alloy 14.00c
Do, ton lots 15.00c
Do, less-ton lots 16.00c
Spot ¼c higher

Molybdenum Powder, 99%, f.o.b. York, Pa., 200-lb. kegs, lb. $2.60
Do, 100-200 lb. lots 2.75
Do, under 100-lb. lots 3.00

WAREHOUSE STEEL PRICES

Base Prices in Cents Per Pound, Delivered Locally, Subject to Prevailing Differentials

	Soft Bars	Bands	Hoops	Plates ¼-In. & Over	Structural Shapes	Floor Plates	Sheets Hot Rolled No. 10	Sheets Hot Roll Ann. No. 24	Sheets Galv. No. 24
Boston	4.26	4.46	5.46	4.11	4.10	5.76	4.21	4.96	5.00
New York (Metropolitan)	4.16	4.36	4.36	4.02	3.99	5.62	4.11	4.50	4.75
Philadelphia	4.03	4.13	4.63	3.92	3.92	5.25	4.03	4.65	4.90
Baltimore	4.00	4.20	4.45	3.90	3.90	5.50	3.95	4.50	4.70
Norfolk, Va.	4.20	4.40	4.65	4.10	4.10	5.70	4.15	4.75	5.40
Buffalo	3.90	4.25	4.25	3.95	3.80	5.55	4.00	4.83	5.38
Pittsburgh	3.80	4.00	4.00	3.70	3.70	5.30	3.75	4.50	5.15
Cleveland	3.75	4.18	4.18	3.88	3.88	5.48	3.93	4.68	5.33
Detroit	3.94	4.19	4.19	3.98	3.98	5.58	3.94	4.69	5.43
Cincinnati	4.08	4.28	4.28	3.98	3.98	5.58	4.03	4.78	5.43
Chicago	3.85	4.10	4.10	3.75	3.75	5.35	3.85	4.60	5.25
Minneapolis	4.10	4.35	4.35	4.00	4.00	5.60	4.10	4.75	5.00
Milwaukee	3.96	4.21	4.21	3.86	3.86	5.46	3.96	4.71	5.36
St. Louis	4.12	4.37	4.37	4.02	4.02	5.62	4.12	4.87	5.52
Kansas City	4.40	4.65	4.65	4.30	4.30	5.90	4.10	4.85	5.50
Memphis	4.35	4.55	4.55	4.25	4.25	5.91	4.30	5.05	5.70
Chattanooga	4.25	4.45	4.45	4.15	4.15	5.98	4.20	4.10	4.70
Tulsa, Okla.	4.89	5.14	5.14	4.79	4.79	6.39	4.89	5.64	6.29
Birmingham, Ala.	3.85	4.05	4.05	3.75	3.75	6.03	3.80	4.55	5.20
New Orleans	4.10	4.65	4.65	4.00	4.00	5.95	4.25	4.75	5.15
Houston, Tex.	3.75	6.15	6.55	4.25	4.25	6.15	4.50	5.25	5.65
Seattle	4.45	4.95	6.30	4.25	4.25	6.00	4.50	5.35	5.90
Portland, Oreg.	4.45	4.95	6.30	4.25	4.25	6.00	4.50	5.15	5.90
Los Angeles	4.30	4.80	6.55	4.30	4.30	6.20	4.50	5.00	5.25
San Francisco	4.20	4.80	6.50	4.05	4.05	5.55	4.30	5.15	5.55

	Cold Rolled Strip	Cold Finished Bars	SAE Hot-rolled Bars (Unannealed) 1035-1050	2300 Series	3100 Series	4100 Series	6100 Series	SAE Cold Drawn Bars 2300	SAE Cold Drawn Bars 3100
Boston	3.76	4.71	4.56	8.00	6.55	6.30	8.40	9.02	7.57
New York	3.81	4.61	4.36	7.84	6.39	6.14	9.54	9.04	7.59
Philadelphia	3.91	4.56	4.28	7.81	6.36	6.11	9.01	....	....
Baltimore	....	4.55	4.15	....	....	....	....	....	....
Norfolk, Va.	....	4.60	....	....	....	....	....	....	....
Buffalo	3.82	4.35	4.10	7.60	6.15	5.90	8.00	8.60	8.15
Pittsburgh	....	4.15	3.95	7.70	6.25	8.50	9.10	8.70	7.25
Cleveland	3.60	4.30	3.95	7.80	6.35	6.35	8.20	8.60	7.15
Detroit	3.80	4.30	4.09	7.92	6.47	6.22	7.74	8.90	7.45
Cincinnati	....	4.53	4.10	7.94	6.49	6.24	9.34	8.95	7.50
Chicago	3.91	4.30	4.05	7.60	6.15	5.90	8.00	8.60	7.15
Minneapolis	....	4.83	4.25	7.95	6.50	9.03	9.63	9.23	7.78
Milwaukee	....	4.41	4.16	7.81	6.36	6.11	8.21	8.81	7.36
St. Louis	4.01	4.57	4.32	7.97	6.52	6.27	8.37	8.97	7.52
Kansas City	4.46	4.85	....	....	....	....	....	....	....
Memphis	....	4.86	....	....	....	....	....	....	....
Chattanooga	....	4.90	....	....	....	....	....	....	....
Tulsa, Okla.	....	5.34	....	....	....	....	....	....	....
Birmingham, Ala.	....	4.98	....	....	....	....	....	....	....
New Orleans	5.00	5.10	....	....	....	....	....	....	....
Seattle	....	5.85	6.05	....	8.00	8.00	8.65	....	....
Portland, Oreg.	....	5.85	5.85	9.00	8.00	7.85	8.70	....	....
Los Angeles	5.96	6.85	4.65	9.40	8.55	8.40	9.05	10.40	9.55
San Francisco	9.30	6.80	5.20	9.65	8.80	8.65	9.30	10.65	9.80

CURRENT IRON AND STEEL PRICES OF EUROPE

Dollars at Rates of Exchange, June 16

Export Prices f. o. b. Port of Dispatch—

By Cable or Radio

	British gross tons U. K. ports £ s d	Continental North Sea ports, gross tons Quoted in dollars at current value	Channel or ports, **Quoted in gold pounds sterling £ s d
Foundry, 2.50-3.00 Si.	$27.34 5 10 0	$15.36	1 18 0
Basic bessemer	....	17.99	2 4 6
Hematite, Phos. .03-.05	32.31 6 10 0*	.....	.....
Billets	$39.13 7 17 6	$43.46	5 7 6
Wire rods, No. 5 gage	56.04 11 5 6	41.43	5 2 6
Standard rails	$50.32 10 2 6	$44.28	5 15 0
Merchant bars	2.44c 11 0 0	1.93c	5 5 0
Structural shapes	2.36c 10 12 6	1.78c	4 17 6
Plates, †¼ in. or 5 mm.	2.57c 11 11 3	2.24c	6 2 6
Sheets, black, 24 gage or 0.5 mm.	2.89c 13 0 0	2.61c	7 2 6°
Sheets, gal., 24 ga., corr.	3.72c 16 15 0	3.24c	8 17 6
Bands and strips	2.94c 13 5 0	2.01c	5 10 0
Plain wire, base	4.33c 19 10 0	2.24c to 2.66c	6 2 6 to 7 5 0
Galvanized wire, base	5.16c 23 5 0	2.87c to 2.97c	7 17 6 to 8 2 6
Wire nails, base	4.11c 18 10 0	2.56c to 2.74c	7 0 0 to 7 10 0
Tin plate, box 108 lbs.	$ 5.03 1 0 3	.....	.....

British ferromanganese $102.50 delivered Atlantic seaboard, duty-paid.

Domestic Prices at Works or Furnace—

Last Reported

	£ s d	French Francs		Belgian Francs		Reich Mark
Fdy. pig iron, Si. 2.5	$27.09 5 9 0(a)	$16.56	598	$16.15	475	$25.47 63
Basic bess. pig iron	24.85 5 0 0(a)	.....	...	....	...	28.10 (b) 69.50
Furnace coke	7.46 1 10 0	5.68	205	7.31	215	7.68 19
Billets	39.13 7 17 6	23.27	840	29.24	860	39.02 96.50
Standard rails	2.25c 10 2 6	1.50c	1,150	2.06c	1,375	2.38c 132
Merchant bars	2.71c 12 4 0††	1.40c	1,080	1.65c	1,100	1.98c 110
Structural shapes	2.45c 11 0 6††	1.37c	1,055	1.65c	1,100	1.93c 107
Plates, †¼-in. or 5 mm.	2.60c 11 14 3††	1.76c	1,350	2.06c	1,375	2.29c 127
Sheets, black	3.50c 15 15 0§	2.03c	1,565‡	2.36c	1,575‡	2.59c 144‡
Sheets, galv., corr., 24 ga. or 0.5 mm	4.11c 18 10 0	2.93c	2,250	4.43c	2,950	6.66c 370
Plain wire	4.33c 19 10 0	2.16c	1,660	2.48c	1,650	3.11c 173
Bands and strips	2.87c 12 19 0††	1.57c	1,210	1.95c	1,300	2.29c 127

*Basic. †British ship-plates. Continental, bridge plates. §24 ga. ‡1 to 3 mm. basic price. British quotations are for basic open-hearth steel. Continent usually for basic-bessemer steel. (a) del. Middlesbrough. 5s rebate to approved customers. (b) hematite. °Close annealed ††Rebate of 15s on certain conditions.

**Gold pound sterling carries a premium of 65.74 per cent over paper sterling.

IRON AND STEEL SCRAP PRICES

Corrected to Friday night. Gross tons delivered to consumers, except where otherwise stated; † indicates brokers prices

HEAVY MELTING STEEL

Birmingham, No. 1	10.00
Bos. dock No. 1 exp.	9.00- 9.50
N. Eng. del. No. 1	9.00
Buffalo, No. 1	10.50-11.00
Chicago, No. 1	9.50-10.00
Chicago, auto, no alloy	8.50- 9.00
Chicago, No. 2 auto	7.50- 8.00
Cincinnati, dealers	7.75- 8.25
Cleveland, No. 1	9.50-10.00
Cleveland, No. 2	8.50- 9.00
Detroit, No. 1	6.50- 7.00
Eastern Pa., No. 1	11.50-12.00
Eastern Pa., No. 2	9.50-10.00
Federal, Ill.	9.50-10.00
Granite City, R. R.	10.00-10.50
Granite City, No. 2	9.25- 9.75
Los Angeles, No. 1	11.50-12.00
Los Angeles, No. 2	10.00-10.50
New York, No. 1	†9.00
N. Y. dock No. 1 exp.	8.50
Pitts., No. 1 (R. R.)	12.00-12.50
Pitts., No. 1 (dlr.)	10.50-11.00
Pittsburgh, No. 2	9.50-10.00
St. Louis, R. R.	10.00-10.50
St. Louis, No. 2	9.25- 9.75
San Francisco, No. 1	12.00
Seattle, No. 1	10.00-12.00
Toronto, dlrs. No. 1	9.00
Valleys, No. 1	11.00-11.50

COMPRESSED SHEETS

Buffalo	8.50- 9.00
Chicago, factory	8.75-9.25
Chicago, dealer	8.00- 8.50
Cleveland	9.00- 9.50
Detroit	7.00- 7.50
E. Pa., new mat.	11.50-12.00
E. Pa., old mat.	8.00- 8.50
Los Angeles	12.50-13.00
Pittsburgh	10.50-11.00
St. Louis	5.50- 6.00
Valleys	10.00-10.50
Cincinnati, del	7.25- 7.75

BUNDLED SHEETS

Buffalo, new	8.50- 9.00
Buffalo, old	7.50- 8.00
Cleveland	6.50- 7.00
Los Angeles	11.00-11.50
Pittsburgh	9.50-10.00
St. Louis	4.75- 5.25
Toronto, dealers	6.00

SHEET CLIPPINGS, LOOSE

Chicago	5.25- 5.75
Cincinnati, dealers	3.25- 3.75
Detroit	4.75- 5.25
†Los Angeles	3.75- 4.00
St. Louis	3.50- 4.00

BUSHELING

Buffalo, No. 1	8.50- 9.00
Chicago, No. 1	8.00- 8.50
Cincin., No. 1, deal.	6.25- 6.75
Cincinnati, No. 2	2.00- 2.50
Cleveland, No. 2	4.75- 5.25
Detroit, No. 1, new	6.25- 6.75
Valleys, new, No. 1	9.50-10.00
Toronto, dealers	6.00

MACHINE TURNINGS (Long)

Birmingham	6.00- 7.00
Buffalo	4.50- 5.00
Chicago	4.50- 5.00
Cincinnati, dealers	2.25- 2.75
Cleveland	4.50- 5.00
Detroit	3.25- 3.75
Eastern Pa.	6.00- 6.50
Los Angeles	4.00- 4.25
New York	†2.50- 3.00
Pittsburgh	5.75- 6.25
St. Louis	1.50- 2.00
Toronto, dealers	6.00
Valleys	7.00- 7.50

SHOVELING TURNINGS

Buffalo	6.00- 6.50
Cleveland	5.00- 5.50
Chicago	6.00- 6.50
Detroit	4.00- 4.50
Pittsburgh	6.00- 6.50

BORINGS AND TURNINGS

For Blast Furnace Use

Boston district	1.25
Buffalo	4.50- 5.00
Cincinnati, dealers	1.75- 2.25
Cleveland	4.75- 5.25
Eastern Pa.	6.00- 6.50
Detroit	3.75- 4.25
New York	†2.00- 2.50
Pittsburgh	5.50- 6.00
Toronto, dealers	6.50

AXLE TURNINGS

Boston district	†7.50
Buffalo	9.00- 9.50
Chicago, elec. fur.	9.00- 9.50
Eastern Pa.	9.50 10.00
St. Louis	8.00- 8.50
Toronto	7.00

CAST IRON BORINGS

Birmingham	6.00- 7.00
Boston dist. chem.	†5.00
Bos. dist. for mills	†6.00
Buffalo	4.00- 4.50
Chicago	4.25- 4.75
Cincinnati, dealers	1.75- 2.25
Cleveland	4.75- 5.25
Detroit	3.75- 4.25
E. Pa., chemical	9.50-10.50
New York	†3.00- 3.50
St. Louis	1.50- 2.00
Toronto, dealers	6.50

RAILROAD SPECIALTIES

Chicago	13.00-13.50

ANGLE BARS—STEEL

Chicago	11.50-12.00
St. Louis	10.50-11.00

SPRINGS

Buffalo	14.00-14.50
Chicago, coil	13.50-14.00
Chicago, leaf	13.00-13.50
Eastern Pa.	15.50-16.00
Pittsburgh	14.00-14.50
St. Louis	12.75-13.25

STEEL RAILS, SHORT

Birmingham	15.00
Buffalo	15.50-16.00
Chicago (3 ft.)	12.50-13.00
Chicago (2 ft.)	13.00-13.50
Cincinnati, dealers	15.00-15.75
Detroit	13.50-14.00
Los Angeles	15.00-17.50
Pitts., 3 ft. and less	14.50-15.00
St. Louis, 2 ft. & less	13.00-13.50

STEEL RAILS, SCRAP

Boston district	†9.00
Buffalo	12.50-13.00
Chicago	10.00-10.50
Cleveland	14.00-14.50
Pittsburgh	14.00-14.50
St. Louis	11.00-11.50
Seattle	16.00

FROGS, SWITCHES

Chicago	9.50-10.00
St. Louis, cut	11.00-11.50

ARCH BARS, TRANSOMS

St. Louis	11.50-12.00

PIPE AND FLUES

Cincinnati, dealers	4.75- 5.25
Chicago, net	7.00- 7.50

RAILROAD GRATE BARS

Buffalo	8.00- 8.50
Chicago, net	7.00- 7.50
Cincinnati, dealers	5.25- 5.75
Eastern Pa.	10.50-11.00
New York	†6.50- 7.00
St. Louis	7.00- 7.50

RAILROAD WROUGHT

Birmingham	11.00-11.50
Boston district	†9.00- 9.50
Chicago, No. 1 net	7.50- 8.00
Eastern Pa., No. 1	13.50-14.00
St. Louis, No. 1	8.00- 8.50
St. Louis, No. 2	9.50-10.00
Toronto, No. 1 dlr.	15.00

FORGE FLASHINGS

Boston district	†4.00
Buffalo	8.50- 9.00
Cleveland	8.50- 9.00
Detroit	5.75- 6.25
Los Angeles	9.00
Pittsburgh	9.50-10.00

FORGE SCRAP

Boston district	†4.00
Chicago, heavy	14.00-14.50

LOW PHOSPHORUS

Buffalo, crops	14.50-15.00
Cleveland, crops	15.50-16.00
Eastern Pa., crops	16.00-16.50
Pittsburgh, crops	15.00-15.50

LOW PHOS. PUNCHINGS

Buffalo	14.50-15.00
Chicago	13.50-14.00
Eastern Pa.	16.00-16.50
Pitts. (light & hvy.)	13.50-14.00
Seattle	15.00

RAILS FOR ROLLING

5 feet and over

Birmingham	16.00-17.00
Boston	†9.50
Chicago	14.50-15.00
New York	†13.50-14.00
Eastern Pa.	16.00-16.50
St. Louis	13.25-13.75

STEEL CAR AXLES

Birmingham	16.00-17.00
Buffalo	15.50-16.00
Boston district	†14.00
Chicago, net	15.50-16.00
Eastern Pa.	21.50-22.50
St. Louis	16.50-17.00

LOCOMOTIVE TIRES

Chicago (cut)	13.50-14.00
St. Louis, No. 1	12.00-12.50

SHAFTING

Boston district	†13.00-13.25
New York	†14.00-14.50
Eastern Pa.	18.00-18.50
St. Louis	13.00-13.50

SPECIFICATION PIPE

Eastern Pa.	12.00-12.50
New York	†6.50- 7.00

CAR WHEELS

Birmingham	14.00-15.00
Boston dist., iron	†8.25
Buffalo, steel	14.00-14.50
Chicago, iron	11.50-12.00
Chicago, rolled steel	12.75-13.25
Cincin., iron, deal.	12.00-12.50
Eastern Pa., iron	14.50-15.00
Eastern Pa., steel	15.50-16.00
Pittsburgh, iron	12.00-12.50
Pittsburgh, steel	14.00-14.50
St. Louis, iron	11.25-11.75
St. Louis, steel	12.75-13.25

NO. 1 CAST SCRAP

Birmingham	14.00-14.50
Boston, No. 1 mach.	†10.00
N. Eng. del. No. 2	8.50
N. Eng. del. textile	11.50-12.00
Buffalo, cupola	12.50-13.00
Buffalo, mach.	13.00-13.50
Chicago, agri. net	9.00- 9.50
Chicago, auto	9.50-10.00
Chicago, railr'd net	9.50-10.00
Chicago, mach. net	10.00-10.50
Cincin., mach. deal.	9.75-10.25
Cleveland, mach. net	13.50-14.00
Eastern Pa., cupola	14.50-15.00
E. Pa., mixed yard	11.50-12.00
Los Angeles, net	13.50-14.00
Pittsburgh, cupola	12.50-13.00
San Francisco, del.	13.50-14.00
Seattle	10.00-12.00
St. Louis, cupola	9.50-10.00
St. L., No. 1, mach.	12.00-12.50
St. Louis, agr. mach.	11.25-11.75
Toronto, No. 1, mach., net	11.50

HEAVY CAST

Boston dist. break.	†7.25- 7.50
New England, del.	10.50-11.00
Buffalo, break.	10.00-10.50
Cleveland, break. net	12.50-13.50
Detroit, break.	10.00-10.50
Detroit, auto net	11.00-11.50
Eastern Pa.	12.50-13.00
Los Ang., auto, net	13.00-13.50
New York, break.	†8.00- 8.50
Pittsburgh, break.	10.50-11.00

STOVE PLATE

Birmingham	8.00- 8.50
Boston district	†7.00
Buffalo	10.50-11.00
Chicago, net	6.50- 7.00
Cincinnati, dealers	4.75- 5.25
Detroit, net	7.50- 8.00
Eastern Pa.	10.50-11.00
New York, fdry.	†6.50- 7.00
St. Louis	6.75- 7.25
Toronto, dealers, net	8.00

MALLEABLE

Birmingham, R. R.	12.50-13.50
New England, del.	13.00
Buffalo	12.00-12.50
Chicago, R. R.	10.50-11.00
Cincin., agri. deal.	9.00- 9.50
Cleveland, rail	11.50-12.00
Detroit, auto	10.00-10.50
Eastern Pa., R. R.	14.00-14.50
Los Angeles	17.50-18.00
Pittsburgh, rail	13.00-13.50
St. Louis, R. R.	10.00-10.50

Iron Ore

Lake Superior Ore

Gross ton, 51½ % Lower Lake Ports

Old range bessemer	$5.25
Mesabi nonbess.	4.95
High phosphorus	4.85
Mesabi bessemer	5.10
Old range nonbess.	5.10

Eastern Local Ore

Cents, unit, del. E. Pa.

Foundry and basic 56.63% con.	9.00-10.00
Cop.-free low phos. 58-60%	nominal

Foreign Ore

Cents per unit, f.a.s. Atlantic

Foreign manganiferous ore, 45.55% iron, 6-10% man. nom.	12.00-13.00
No. Afr. low phos.	nominal
Swedish low phos.	17.00-18.00
Spanish No. Africa basic, 50 to 60% nom.	12.00
Tungsten, sh. ton unit, duty pd. nom.	$18.00-19.00
N. F., fdy., 55%	7.00
Chrome ore, 48% gross ton, c.i.f.	$25.50-26.50
Molybdenum ores sulphide, per lb. molybdenum contained, f.o.b. mill	0.75

Manganese Ore

Prices not including duty, cents per unit cargo lots.

Caucasian, 50-52% nom.	45.00
So. African, 50-52% nom.	45.00
Indian, 50-52%	Nominal

Sheets

Sheet Prices, Page 76

New York — With sellers having opened books for third quarter at 3.65c, Pittsburgh, a more stable market in galvanized sheets is expected. Prior to this action, the market on galvanized sheets had become increasingly unsettled, with concessions in some quarters substantially greater than the $3 reduction in the official price, as represented by the new 3.65c figure. While not general, some consumers are said to have covered substantially at these lower prices.

Sheet demand in general this month shows little change from May, although the trend is still on the downward side. A recent feature is the placing of 334 tons of 24-gage sheets, 13 9/16 by 70 15/16 inches, for automobile license plates for the state of New York for delivery in third quarter. This business went to the Mohawk Steel & Iron Co., Albany, N. Y., at 3.915c, f.o.b. Auburn, with a 1 per cent cash discount on a basing point value of 3.595c. Steel will be supplied by the Youngstown Sheet & Tube Co., Youngstown, O. All other bids were 3.95c, f.o.b. Auburn, with ½ per cent cash discount on a basing point value of 3.63c.

Pittsburgh — Mills making hot-rolled annealed sheets have noted a slight improvement in specifications, enabling them to lift operations 1 point to 29 per cent of capacity. The same state of affairs applies to jobbing mills, but they have increase their operating rate to 22 per cent, from 20 per cent in the preceding week. New business is irregular.

Cleveland—Specifications for hot and cold-rolled sheet products have eased slightly in a few instances. However, most producers report total bookings at the middle of the month were on a par with the comparable period during May. Outlook for the remainder of June is not optimistic, with further curtailment from the automotive industry in the offing and the general seasonal easing in requirements from household equipment manufacturers and other consumers. Most mills have not yet made any official announcement on the anticipated adjustment in galvanized sheet prices.

Chicago—Demand continues light but an increase in automotive requirements is now anticipated. Interest this week centered on galvanized sheet prices. One independent producer has officially announced new price at $3.75 per 100 pounds, No. 24 gage base, f.o.b. Gary, effective at once and for third quarter shipment. Consensus is that the new galvanized sheet price will have no appreciable effect on stimulation of buying.

Boston—A few orders for galvanized sheets have appeared but the aggregate volume of business placed with mills lags. Blue annealed continue to make relatively the best showing, but demand for that finish is irregular. Jobbers and large consumers are buying only for fill-in needs. A few fabricators of small tanks are slightly more active, but stamping and forming shops are slack.

Philadelphia — Moderate automotive sheet releases are noted but are said to be close to the last for 1938 model requirements. Demand from other sources is apathetic although occasional round lots are reported placed. An example is 400 tons of cold-rolled for bus body builders for the state of North Carolina.

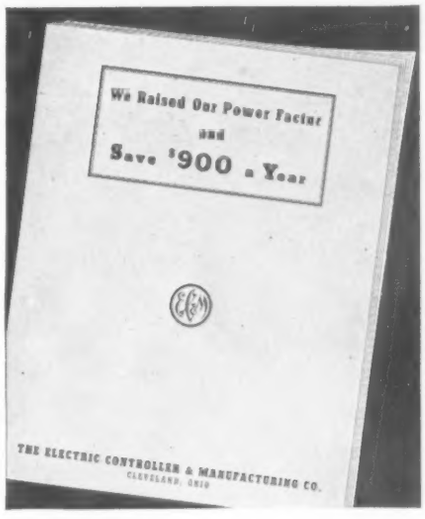
Buffalo — Sheet buying continues to lag but is no worse than recent

A New Booklet on Power Factor Correction

Showing How One Plant Saved $900 a Year

FREE

to Industrial Plants, Power Companies, Representatives of Motor Manufacturers etc.



THIS BOOKLET describes: ***What causes poor Power Factor —why it is expensive—what steps may be used to determine if poor power factor is present—what methods may be used for correction.***

Now available . . . this new 24-page booklet, just off the press . . . complete discussion of the subject of power factor, written in a non-technical manner to permit quick understanding. Extremely useful and helpful to every industrial plant or institution using a large number of motors. Also available to power companies, synchronous motor manufacturers or their representatives and others interested in power factor correction. Merely fill out and mail the coupon below for your copy. Only a limited supply has been printed —be sure to mail coupon today.

THE ELECTRIC CONTROLLER & MFG. CO. CLEVELAND, OHIO

HEAVY DUTY MOTOR CONTROL FOR CRANES, MILL DRIVES AND MACHINERY • BRAKES • LIMIT STOPS • LIFTING MAGNETS AND AUTOMATIC WELD TIMERS

THE ELECTRIC CONTROLLER & MFG. CO.
2688-M East 79th St., CLEVELAND, OHIO

Gentlemen:

Please send me your new booklet on Power Factor Correction.

NAME .....

COMPANY .....

ADDRESS .....

preceding weeks. The price situation for galvanized sheets is still muddled. Mills are guarding against building up inventories and production is restricted to demand.

Baltimore — Sellers of sheets, strip, nails and other miscellaneous products anticipate good demand from the Carolina tobacco growers who are experiencing a good crop at reasonably good prices. Steadier galvanized sheet prices are anticipated here now that producers have opened books for next quarter at 3.65c, Pittsburgh. This is a drop of $3 a ton in the official price, but in some cases represents an actual increase over prices quoted recently.

Cincinnati — Miscellaneous sheet demand, although retarded, so far has resisted any abrupt break because of seasonal influences. A recent bulge in ordering helped bring June tonnage to a level with May. Buying for the first of the 1939 automobile production lines may give a lift as early as next month. District mills followed in announcing a $3 reduction in galvanized.

St. Louis—The sheet situation shows little change. Demand is on a necessity basis. Public works are taking some tank plate, and outlet through this channel is expected to broaden. Tin plate, while measurably below a year ago, is moving in better than expected volume. Purchasing by jobbers is confined to lots to fill assortments.

Birmingham, Ala.—For the first time in several weeks sheets have shown an upward tendency over the past several days, although no outstanding business is available. Mills report some upturn in both roofing and manufacturers' sheets.

PERKINS
MAN
COOLER
Trade Mark
Reg. U. S. Pat. Off.
PERKINS MAN COOLERS, recognized as the most efficient appliance for bringing comfort to workers in hot places, are proving a vital factor in production. They are keeping men comfortably at work in the hottest places, reducing labor turnover, speeding production.
Made in OSCILLATING and STATIONARY types, (both portable).
B. F. PERKINS & SON, Inc. HOLYOKE, MASS.

Strip

Strip Prices, Page 77

Pittsburgh—Lower operating rate is noted in the hot strip industry, dropping to 15 per cent of capacity, against 16 per cent the preceding week. However, continued inflow of small orders for cold strip led to the mills this week maintaining their operations unchanged at 18 per cent. Sales of both hot and cold-rolled strip are confined largely to narrow to medium widths and for small individual tonnages.

Cleveland—Demand for wide and narrow strip has registered little change recently. Miscellaneous consumers continue to enter the market only for actual needs and for prompt delivery. Despite the fact inventories among consumers both large and small are said to be at lower levels today than at any time this year no material improvement in specifications is anticipated until operating schedules are substantially increased. Absence of normal requirements from automotive sources is keenly felt.

Chicago — Lightness of demand continues as fabricators show no promise of strengthening requirements in the near future. Recent price changes have been without effect and prospects of increased demand are rather dull.

Boston — Narrow cold strip buying is unchanged and slow. Operations with some rerollers are a few points lower, but in general the trend is sufficient to hold finishing mills to about 30 per cent of capacity. Demand is almost entirely from miscellaneous consumers, prompt shipment being asked on such specifications. Mill operations in all departments are closely geared to incoming volume with little or no advance business on the books.

New York — Still curtailed by lack of buying by automotive and other larger consuming industries, cold strip volume is barely held to

the recent slow rate. Orders are fairly numerous, but small and diversified, from miscellaneous users. Mills are generally meeting widespread demand for prompt delivery even in small shipments, although operations are irregular, due to lack of volume.

Philadelphia—Demand for narrow strip is generally light but declining inventories lead sellers to believe some replacement will be necessary during the next few weeks. Prices are firm.

Birmingham, Ala.—Nothing to indicate a revival of buying in strip is reported by local mills, dependent largely on cotton ties for their major business in that specification.

Plates

Plate Prices, Page 76

New York—Plate buying continues limited to small tonnages. Substantial ship work, however, is in contemplation with steel pending for the four C-2 cargo boats placed by the United States maritime commission with Newport News Ship Building & Dry Dock Co., Newport News, Va., with steel orders likely to go through New York, it is said, and with the award of four C-3 cargo boats for the American Export Line Inc., this city, still pending; also, the 30 steel scows for the city of New York upon which bids were opened more than a month ago.

Boston—With most pending tank work under contract, plate demand has flattened out, with miscellaneous requirements for prompt shipment predominating. Shipyard releases are steady, but boiler, structural and tank shops are buying in small lots. Railroads are specifying few plates with repair shops slackening. The locomotive section, Readville, Mass., repair shops of the New York, New Haven & Hartford has closed, due to the reduced number of steam locomotives required to haul freight traffic.

Philadelphia—The navy department will take bids soon on one to three tugs, asking alternate bids for steam and diesel drives. No further releases are noted against naval vessel contracts. Considerable cargo vessel steel is pending but releases on bulk requirements is not expected for several months. Some business is coming out from oil refineries but this is the only bright spot among miscellaneous lines. Tank and range boiler makers are doing little.

Washington — Navy department takes bids Sept. 21 for construction of one seaplane tender and one destroyer tender, taking several thousand tons of steel each, mostly hull plates.

Baltimore—Shipwork has been outstanding in a generally drab plate market. Considerable work is under way at Sparrows Point and elsewhere along the eastern seaboard and this program is expected to expand as the year progresses. Railroad buying has been negligible. The local Baltimore & Ohio shops are operating at a low rate, with no important releases in several months.

Cleveland—Inquiries continue to show a slight improvement, foretelling a moderate increase in orders within the next 60 days. Current mill operations remain substantially unchanged from the low levels prevalent through May. Present requirements are limited to miscellaneous small orders from industrial sources for presses, tanks and other similar needs. Railroad and structural market continues inactive and no material improvement is anticipated within the near future.

Chicago—Demand from fabricators is reported slightly better

It takes Experience

There are 15 outstanding reasons why leading engineers and production men everywhere say that the Philadelphia MotoReduceR is the logical choice. They're all explained in our bulletin M.R. 36. A copy will be sent you on request.

Designing and building equipment that performs with the steady, smooth efficiency of the Philadelphia Moto-ReduceR is obviously the result of experience . . . and it's experience that's of value to every plant executive interested in cutting his operating costs to the bone. The long wear, the trouble-free operation and the unusually high efficiency of these Units make possible real savings in driving all types of machinery. Let us tell you how you can enjoy these savings . . . one of our engineers will gladly consult with you.

PHILADELPHIA MOTOREDUCER

Philadelphia Gear Works
Industrial Gears and Speed Reducers
Erie Avenue and "G" Street
PHILADELPHIA

and sales this week are somewhat improved over last. No buying for stock is believed prevalent and orders for immediate needs only. Oil refinery tanks constitute a good portion of plates used.

Birmingham, Ala. — While scattered business in plates continues to be booked production has slowed to a considerable extent, due to the absence of orders sufficiently large to furnish the necessary operating momentum.

Seattle—The largest plate job in several months is up for figures at Vancouver, B. C., July 7, specifications calling for 25,175 feet of electric welded pipe, or alternates, for the Greater Vancouver water district. Tonnages are unstated but the call is for 9500 feet of 60-inch, 4500 feet of 48-inch and 9500 feet of 32-inch. Bureau of reclamation, Denver, will open tenders July 1 for forty 102-inch welded plate steel conduit linings with supports and other fittings for Coulee dam, tonnages unstated.

Plate Contracts Placed

200 tons, water tank, Bridgeport, Conn., and tanks, Colombia, South America, to Norwalk Tank Co., South Norwalk, Conn.

Plate Contracts Pending

350 tons, plates and shapes, four riveted steel barges, knocked down for export, to American Bridge Co., Pittsburgh.

Unstated tonnage, two 55 by 20 welded steel anchor barges, delivery U. S. engineer, Galveston, Tex.; Levingston Shipbuilding Co., Orange, Tex., low; bids June 8, pro. 263.

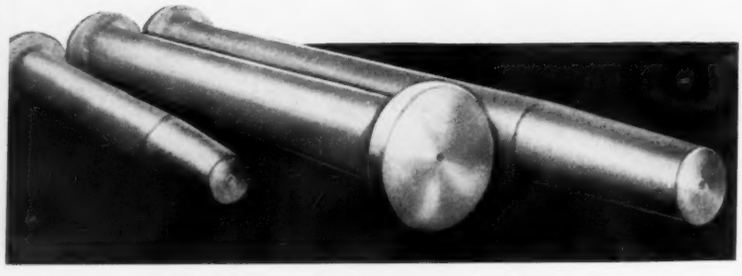
Unstated tonnage, 25, 175 feet of 32, 48 and 60-inch electric welded, or alternate, water mains; bids to E. A. Cleveland, 1303 Sun building, Vancouver, B. C., July 7.

Unstated tonnage, forty 102-inch conduit linings for Coulee dam; bids to reclamation bureau, Denver, July 1; specification 789.

Unstated tonnage, two storage tanks, capacity 32,000 barrels, for Tidewater Associated Oil Co., Seattle; plans preparing

Unstated tonnage, two steel dump scows, United States engineer, Huntington, W. Va.; Bethlehem Steel Co. and Virginia Bridge Co. low on riveted, Nashville Bridge Co. low on welded; bids June 6.

Specify "STANDARD" for Quality



Ship Tail and line Shafts

Dependable quality is seldom fresh born. It nearly always goes back to the painstaking research by a company striving for perfection and to the knowledge that is gained from the experience of mistakes and victories.

Back of us are many years of research, engineering and experience that have resulted in a continued advancement in the quality of "Standard" products. We solicit your use of the facilities offered by this company.

CASTINGS • FORGINGS • WELDLESS RINGS
WROUGHT STEEL WHEELS

BRAND

STANDARD Steel Works COMPANY

BURNHAM, MIFFLIN CO., PENNA.
District Offices
New York · Philadelphia · Chicago · San Francisco
Portland, O. · St. Louis

Bars

Bar Prices, Page 76

New York — Bar orders recently have been a little more numerous, according to some sellers. However, the situation remains spotty and buying so far this month has barely held its own. Lack of automotive and railroad demand is still being seriously felt by sellers. On the other hand, ship work is holding up better than most lines, with the outlook encouraging for a steady expansion in bar requirements as the year progresses. Airplane manufacturers are active, and while the tonnage involved in their purchases is not large, this business is running into considerable money because of the special steels.

Boston—Commercial steel, alloy and forging bar demand tends downward with buying confined to small shipments of needed specifications or sizes out of stock. Fewer forging shop hammers are engaged, demand for marine hardware having slipped, although those connected with the airplane industry are doing better. Makers of bolt and nut specialties are buying sparingly, but are making some progress in liquidation of finished stocks. A Providence, R. I., district file manufacturer is apparently low on a large navy inquiry.

Philadelphia—Merchant bar volume is holding fairly well, although somewhat irregular. Much present business is moving through jobber outlets, due to diversified character of consumer requirements.

Cleveland—Reflecting the gradual easing in demand from implement

manufacturers, producers of carbon and alloy steel bars report a moderate decline in total tonnage booked this month compared with the similar period during May. Outlook over the summer months is not encouraging, due to the financial condition of railroads and the anticipated further easing in specifications from partsmakers serving the automotive industry. Mill operations remain unsteady. Prices are firm.

Chicago — Producers look to the automotive industry for an early increase in requirements. Demands of tractor makers have lessened but requirements for other farm equipment items continue to total a fair tonnage. In automotive demand, prospects of a short changeover period and continuation of operations farther into the summer spur hope of an appreciable increase from this source.

Birmingham, Ala.—Bars are in less demand than for several months due to failure of expected implement business to materialize. Producers are not overly optimistic and production is on a restricted basis.

Pipe

Pipe Prices, Page 77

Pittsburgh—Wrought pipe's trade lull still is pronounced, with seamless tubing in medium to small diameters leading in demand. Several Texas and Louisiana line pipe proposals still are in the engineering stages. Building projects continue to furnish a fair amount of demand for butt welded.

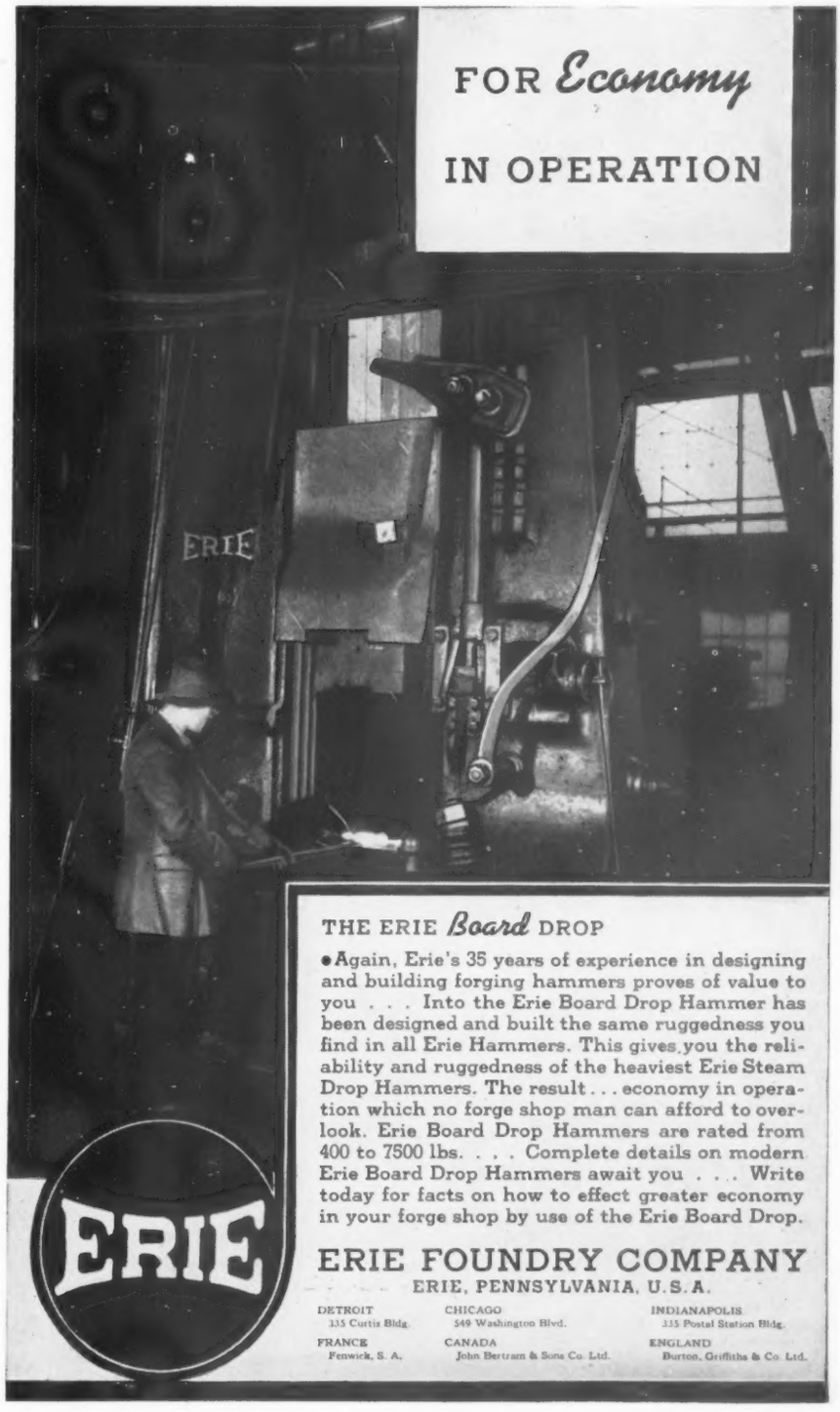
Cleveland—Shipments of standard steel pipe from jobbers' stocks have shown little change recently, continuing at approximately the same volume reported through May. Demand from industrial sources for extensions and repairs is at a minimum. However, considerable tonnage is pending from small municipalities depending on extent of federal grants. Prices are generally unchanged, although a slight easing in fittings is reported.

Chicago—Demand for cast pipe is unimproved. Requirements of municipal projects are tapering off and cast pipe interests believe there is little likelihood of increased demand from these sources. Plans for several waterworks and sewage systems have been abandoned due to unavailability of government funds.

Texas Co. is planning a pipe line for crude oil from Louisiana fields to its refinery in Port Arthur, Tex., 250 miles. Survey is under way. Continental Oil Co., Ponca City, Okla., will build a natural gas gathering system of 80 miles in the field about Kemp City, Tex., to deliver gas to a casinghead gasoline plant to be built near Wichita Falls, Tex.

Boston—Cast pipe inquiry which includes 350 tons for Chicopee, Mass., is slightly lower. New Jersey foundries booked 685 tons for three cities following recent bids in which French pipe sellers entered estimates. Releases against old orders continue brisk. Boston placed 100,000 pounds, flanged frame castings with E. L. LeBaron Foundry Co., Brockton, Mass., at 2.90c per pound, delivered.

New York—For Newark, N. J., the state precurement office, treasury department, is taking bids this week on approximately 625 tons of 18-inch cast pipe, the largest new inquiry. A New Jersey utility is closing this week on approximately 500 tons, but buying is mostly for small lots by contractors covering miscellaneous work. New York procurement offices is making its last pipe purchases under current appropriations, expecting to resume purchases


FOR Economy
IN OPERATION
ERIE
THE ERIE Board DROP
• Again, Erie's 35 years of experience in designing and building forging hammers proves of value to you . . . Into the Erie Board Drop Hammer has been designed and built the same ruggedness you find in all Erie Hammers. This gives you the reliability and ruggedness of the heaviest Erie Steam Drop Hammers. The result . . . economy in operation which no forge shop man can afford to overlook. Erie Board Drop Hammers are rated from 400 to 7500 lbs. . . . Complete details on modern Erie Board Drop Hammers await you . . . Write today for facts on how to effect greater economy in your forge shop by use of the Erie Board Drop.
ERIE
ERIE FOUNDRY COMPANY
ERIE, PENNSYLVANIA, U.S.A.
DETROIT 335 Curtis Bldg.
CHICAGO 549 Washington Blvd.
INDIANAPOLIS 335 Postal Station Bldg.
FRANCE Fenwick, S. A.
CANADA John Bertram & Sons Co. Ltd.
ENGLAND Burton, Griffiths & Co. Ltd.

in volume in about six weeks.

A substantial tonnage of merchant pipe will be required for the Red Hook and Queens bridge housing projects, which are now reaching an active stage. Other than this, the outlook is featureless, with resellers continuing to offer deep concessions on such business as come up for figuring. Only exception are jobbers, who have mill stocks on consignment and who therefore must comply with producers wishes in quoting at the published levels.

Birmingham, Ala.—While maintaining production on the reduced schedule in effect for several months, pipe interests are more inclined to an optimistic viewpoint with announcement of contemplated public spending. Inquiries, however, are not reassuring for the immediate future.

San Francisco—Interest in the cast iron pipe market centers around 1650 tons of 2 to 18-inch pipe for Redding, Calif., bids June 15. Only large letting of the week went to United States Pipe & Foundry Co. and involved 128 tons of 6-inch pipe for treasury department, San Francisco. Pacific States Cast Iron Pipe Co. submitted the low bid at $6531.21 for 17,331 feet of 2 and 4-inch pipe for Los Angeles. Awards totaled 291 tons and brought the aggregate for the year to 14,287 tons, compared with 16,600 tons for the same period a year ago.

Cast Pipe Placed

275 tons, 8 and 12-inch, class C, Boston, to United States Pipe & Foundry Co., Burlington, N. J., through procurement division, treasury department, Boston.

225 tons, mostly 16-inch, class 150, Salem, Mass., to R. D. Wood & Co., Florence, N. J.

185 tons, 6, 8 and 12-inch, class C, Malden, Mass., to United States Pipe & Foundry Co., Burlington, N. J.

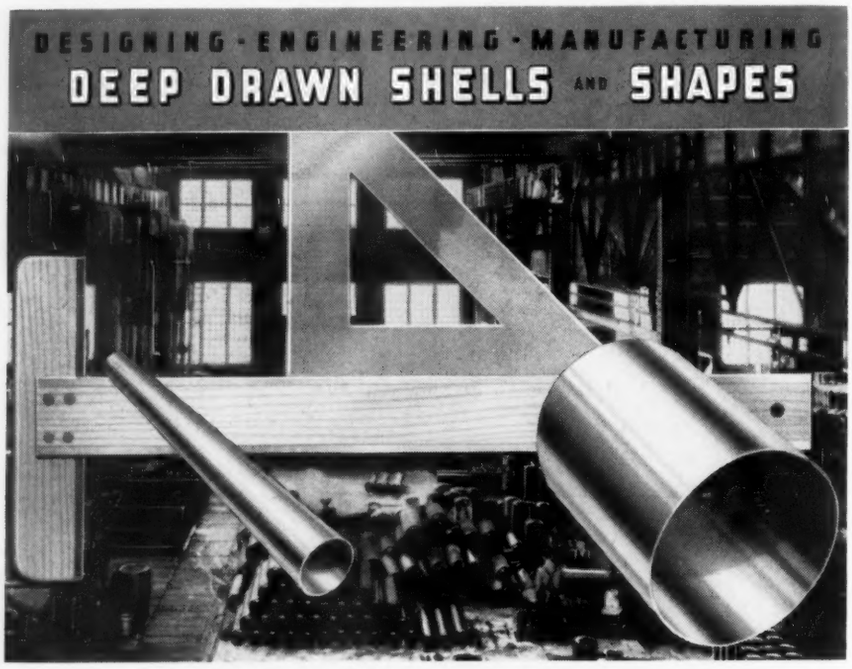
128 tons, 6-inch, class 150, treasury department, San Francisco, invitation 5482, to United States Pipe & Foundry Co., Burlington, N. J.

Cast Pipe Pending

340 tons, 6 to 16-inch, Chicopee, Mass.

Steel Pipe Placed

110 tons, 24-inch i. d. shore and discharge pipe, U. S. engineers, Louisville, Ky., to American Rolling Mill Co., Middletown, O.; delivery at Delhi, O.



Hackney MILWAUKEE PROVIDES NEW
PRODUCTION ECONOMIES FOR MANY MANUFACTURERS

Thousands of dollars have been saved by manufacturers who have taken advantage of Pressed Steel Tank Company's design and precision manufacturing facilities. Standard and special shapes and shells have been developed by the Hackney method to meet numerous individual requirements.

You, too, can receive the benefit of Hackney's 35 years' experience in producing parts, equipment and containers for handling and storing gases, liquids and solids. Let Hackney engineers help you reduce costs and increase efficiency —develop new shapes or containers—or improve products now being used.

Get the details about the complete time and money-saving service Hackney offers manufacturers. It doesn't cost anything to find out about it and may be the means of making BIG savings. Write for details today. There is no obligation.

PRESSED STEEL TANK COMPANY

208 S. La Salle St., Rm. 1211, CHICAGO
1387 Vanderbilt Concourse Bldg., NEW YORK
688 Roosevelt Building, LOS ANGELES
1461 S. 66th Street, MILWAUKEE

Hackney MILWAUKEE

Containers for Gases, Liquids and Solids

Wire

Wire Prices, Page 77

Pittsburgh — Manufacturers' wire, as has been the case for some time, is the most active branch of the wire trade. Nails are in slightly better demand from western and southern agricultural districts, but fence wire is seasonably quiet.

Cleveland—Producers of manufacturers' wire and merchant wire report little change in current requirements. Demand from partsmakers serving the automotive industry continues discouraging and little improvement is anticipated from this source in the near future. Demand from agricultural centers has held up fairly well although slight easing in requirements is noted in some instances. Jobbers' stocks of nails and other items for resale have been gradually depleted. Prices are firm.

Chicago — Demand continues unchanged but is comparatively fair. Automotive requirements are expected to show slightly more activity but farm equipment needs are still tapering. Wire mesh demand of road builders is expected to hold well until late fall.

Boston — Wire rope sales by one district producer have been running about 25 per cent under last year, a better showing than that

made by most wire products. Chain-link fencing sales have also held better than expected and reinforcing fabric is active in some states. Manufacturers' wire and specialties continue to move at the recent slow rate, demand having leveled off with the total volume of incoming tonnage, mostly confined to small lots.

New York — In view of the absence of buying by the automobile industry in recent months, a mild improvement in demand for cushion wire is encouraging. There has also been some improvement in manufacturers' wire, about offsetting the slump in merchant products. On the whole, however, there is little change in volume of incoming tonnage. Orders are fairly numerous, but small. Finishing operations continue irregular. Sellers meet little pressure on prices, although few inquiries appear that might be used as a lever against current quotations.

New Orleans—Page Steel & Wire division, American Chain & Cable Co., has been awarded 330,000 square feet of galvanized wire fabric, for the U. S. engineer, 2d district, New Orleans, at $2.60 per 100 square feet, f.o.b. Monessen, Pa.; bids June 6, pro. 578.

Birmingham, Ala.—Wire products output is up somewhat from recent weeks, due to a temporary increase in business. Shipments this week were in better proportion to output than for several weeks.

Rails, Cars

Track Material Prices, Page 77

Almost complete lack of buying by railroads is evident. Failure of congress to give financial aid before adjournment is in part responsible. Approval of the purchase of 5550 cars by the Southern railway has not yet been made by the interstate commerce commission. The Pennsylvania has not completed check of its steel on hand and cannot yet place material for its car and locomotive building program at Altoona, Pa.

White Pass & Yukon railroad has received a locomotive from Baldwin Locomotive Works and may place several others after test on its steep grades.

Locomotives Placed

White Pass & Yukon, one 100-ton steam locomotive, to Baldwin Locomotive Works, Philadelphia.

Buses Booked

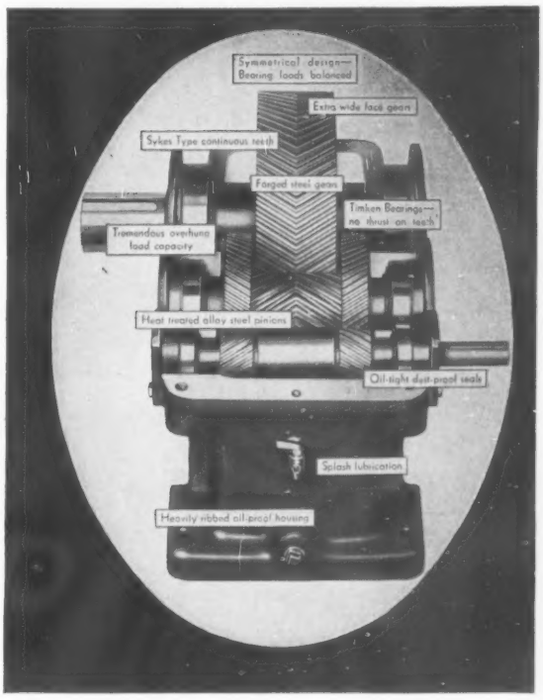
American Car & Foundry Motors Co., New York: Twenty-one 36 passenger for Southeastern Greyhound lines, Lexington, Ky.; nineteen 37-passenger for Santa Fe Trail Transportation Co., Wichita, Kans.; five 37-passenger for Rio Grande Motorway Inc., Denver; four 35-passenger for Boston Elevated Railway, Boston; three 37-passenger for Denver, Colorado Springs & Pueblo Motorway Inc., Denver; two 36-passenger for Union Bus Co., Jacksonville, Fla.; two 36-passenger for Southern Kansas Greyhound Lines, Kansas City, Mo.

Twin Coach Co., Kent, O.: Twenty-five 32-passenger for Georgia Power Co., Atlanta, Ga.; twenty 40-passenger for Surface Transportation Co., New York; one 35-passenger and one 40-passenger for Long Motor Bus Corp., Long Beach, Calif.

Cold-Finished

Cold Finished Prices, Page 77

Pittsburgh — Makers of cold-finished steel bars expect a balancing up of stocks in automotive hands as the 1938 production season nears its end. This may bring out some additional business. Just now, however, the industry as a whole is going along on an even keel but at a slow pace.



★

RUGGED

all the

way through

The features shown in the double reduction Horsburgh & Scott Herringbone Speed Reducer illustrated are found also in the single and triple reduction Herringbone units. All gears are Sykes type continuous tooth Herringbone . . . the most accurate Herringbone gears it is possible to produce.

Extreme accuracy, herringbone tooth design, and the locking of gears between oversize Timken Roller Bearings insure quiet, smooth operation.

Horsburgh & Scott Herringbone Speed Reducers bring maintenance cost close to the zero point. Their depreciation is exceedingly low, even under very heavy shock loads and other difficult conditions of service.

Send for catalog of our complete line.

THE HORSBURGH & SCOTT CO.

GEARS AND SPEED REDUCERS

5112 HAMILTON AVENUE, CLEVELAND, OHIO, U. S. A.

Shapes

Structural Shape Prices, Page 76

New York—Led by 12,000 tons for a 28-story office building, structural contracts in the New York district are the highest in months. New inquiry is featured by 7000 tons for subway construction, Brooklyn, closing July 8, the first new work in more than a year. Closing June 21, two schools, Brooklyn, require 1970 tons and with other projects closing on that day, 7175 tons are involved. Fabricated prices are erratic and weakened by competition for even smaller tonnages.

Baltimore—Although light compared with a year ago, structural activity has been fairly sustained, with some fabricators regarding activity a shade better than last month. Most of this work is comprised of small miscellaneous tonnages.

Boston—Award of 1200 tons for a railroad machine shop, Everett, Mass., is the outstanding structural contract. Most purchases are for small projects and inquiry for such requirements are slightly more numerous. Bids will be taken shortly on the U. S. marine hospital, Brighton district, Boston, a $2,200,000 project including 11 buildings. Figures go in July 8 on a male patients' building, state hospital, Tewksbury, Mass.

Chicago—Inquiries were heavier the first part of the week but volume the latter part was almost negligible. No large projects have been evident but total tonnage was encouraging in view of the recent lightness of requests. A hangar at Hickman Field, Honolulu, T. H., calls for 1600 tons. Smaller inquiries are fairly numerous. Bethlehem Steel Co. was awarded 900 tons for an administration building for Chicago park district.

Philadelphia—A 4500 tons bridge job in Washington, for the district of Columbia commission, on which bids are due July 8, constitutes the most important job before district fabricators. Several other jobs taking 100 to 700 tons also are due for bids before the end of the month. Prices are none too steady on fabricated material.

St. Louis—Outlook has improved slightly, with interest centering in public works in adjoining states. The St. Louis Structural Steel Co. was awarded 850 tons for the mucipal auditorium at Little Rock, Ark. Oklahoma is inquiring for material for bridge projects, requiring 4284 tons. Bids will be taken June 20 at Little Rock for 1600 tons of steel piling, for a retaining wall and at Topeka, Kans., bids are in for 456 tons of steel sheet piling. Local fabricating plants are operating at about one-fourth of capacity.

San Francisco—Of special interest was the opening of bids on 11,000 tons of sheet steel piling for the United States engineer office, Los Angeles, on which identical bids were submitted by Columbia Steel Co., Bethlehem Steel Co. and Inland Steel Co. Awards totaled 2316 tons,

DEPENDABLE SERVICE QUALITY

1906 32 years 1938

DAMASCUS MANGANESE AND ALLOY CASTINGS

Manganese and Alloy Steel Castings One Half to One Thousand Pounds Produced in our modernly equipped foundry from electric furnace steel and heat-treated in automatically controlled gas-fired furnaces.

DAMASCUS STEEL CASTING CO.
New Brighton, Pa.
(Pittsburgh District)

Shape Awards Compared

	Tons
Week ended June 18	31,418
Week ended June 11	25,200
Week ended June 4	10,657
This week, 1937	22,080
Weekly average, year, 1937	16,060
Weekly average, 1938	16,121
Weekly average, May	8,963
Total to date, 1937	661,446
Total to date, 1938	403,015

Includes awards of 100 tons or more.

bringing the aggregate to date to 50,116 tons, compared with 104,261 tons last year.

Seattle—Reclamation bureau has called bids at Denver June 23 for furnishing 18 cast steel draft tube pier noses and 108 arch or bolt assemblies, Spec. 1080-D for Coulee dam and June 27 for two bulkhead gates for penstock inlets, same project, Spec. 1084-D. Tonnages are unstated. Business pending includes 150 tons for an Oregon state overcrossing at Portland.

Shape Contracts Placed

12,000 tons, 28-story office building, Metropolitan Life Insurance Co., Twenty-fourth street and Madison avenue, New York, to American Bridge Co., Pittsburgh; Starrett Bros. & Eken, New York, general contractor.

6500 tons, tunnel rings and miscellaneous steel, Manhattan land section, Queens mid-town tunnel, New York, to Bethlehem Steel Co., Bethlehem, Pa.; through Woodcrest Construction Co. and Rosoff Bros., New York.

1400 tons, plant buildings, Ecusta Paper Corp., near Brevard, N. C., to Bethlehem Steel Co., Bethlehem, Pa.; Fiske-Carter Construction Co., Greenville, S. C., general contractor.

1300 tons, transit shed, Bayonne, N. J., to Bethlehem Steel Co., Bethlehem, Pa.

1200 tons, superstructure, engine and machine shop, Boston Elevated railroad, Everett, Mass., to Bethlehem Steel Co., Bethlehem, Pa.

900 tons, administration building, Chicago Park district, Chicago, to Bethlehem Steel Co., Chicago.

840 tons, auditorium, Little Rock, Ark., to St. Louis Structural Steel Co., St. Louis.

625 tons, United States engineer office, San Francisco, for delivery at Fort Funston, 445 tons of plain material to Columbia Steel Co., San Francisco, and 180 tons fabricated shapes to Bethlehem Steel Co., Alameda, Calif.

480 tons, building addition, Link-Belt Co., Indianapolis, to Insley Mfg. Co., Indianapolis.

460 tons, Olentangy apartment buildings, L. L. LeVeque Co., Columbus, O., to Columbus Steel Industries Inc.

420 tons, telephone building, No. 221, East Thirty-seventh street, New York, to Ingalls Iron Works, Birmingham, Ala.; through John Lowry Inc., New York.

410 tons, bridge 1620, Spencer county, and bridge 1692, Crawford county, Indiana, to Midland Structural Steel Co., Cicero, Ill.

400 tons, highway bridge, Winslow, Nebr., to Omaha Steel Works.

280 tons, building at fair site, Yerba Buena Island, San Francisco, to Moore Drydock Co., Oakland, Calif.

265 tons, arts school, Evansville, Ind., to International Steel Co., Evansville.

250 tons, warehouse, Salem, N. J., to Bethlehem Steel Co., Bethlehem, Pa.

245 tons, sec. 5-2F, Madison county, Troy, Ill., to Duffin Iron Co., Chicago.

210 tons, building addition, state cancer clinic, Buffalo, to Bethlehem Steel Co., Bethlehem, Pa.

210 tons, truss spans, Mills and San Saba counties, Texas, to Pittsburgh-Des Moines Steel Co., Pittsburgh.

200 tons, grandstand supports, Ebensburg, Pa., for United States treasury department, to Bethlehem Steel Co., Bethlehem, Pa.

200 tons, head frames, Glen Alden Coal Co., Scranton, Pa., to Anthracite Bridge Co., Scranton.

200 tons, state bridge 342, Waterloo, Wis., to American Bridge Co., Pittsburgh.

188 tons, bridge, Coshocton county, Ohio, to Burger Iron Works, Akron, O.; through Wendling Bros., Dover, O.

185 tons, 18 beam spans, various locations, Missouri Pacific railroad, to American Bridge Co., Pittsburgh.

175 tons, bridge, sec. 1-F Bond county, Sorento, Ill., to Fort Pitt Bridge Works, Pittsburgh.

175 tons, bridge, Sangamon county, Springfield, Ill., to Gage Structural Steel Co., Chicago.

170 tons, state bridge over Great Northern railway, Shelby, Mont., to American Bridge Co., Pittsburgh.

160 tons, grader plates, Mississippi state highway department, Jackson, Miss., to Columbus Iron Works.

160 tons, state bridges RC-2513, Norwich, N. Y., to Lackawanna Steel Construction Corp., Buffalo.

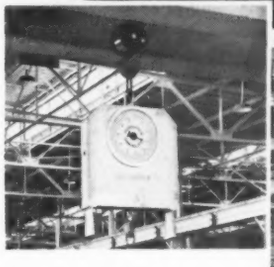
150 tons, six oil derricks, Long Beach, Calif., two for General Petroleum Corp., and one each for Allied, Petroleum Corp., Superior Oil Co., Kovell Oil Co. and Hollywood Oil Co., to unnamed interests.

140 tons, state highway bridge, No. 3959, Essex county, New York, to Ingalls Iron Works, Birmingham, Ala.; through Triangle Constructors Inc., Brooklyn, N. Y.

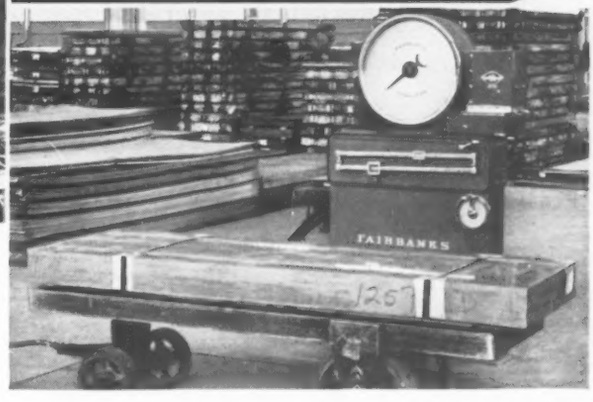
CENTRAL STEEL & WIRE

USES *13 Printomatics*

IN CHICAGO WAREHOUSE



● Two overhead printomatic crane dial scales of 10,000- and 20,000-lb. capacity. These automatically print weights on tickets, which are then ejected from the scales.



● Six of these Fairbanks scales are 10,000-lb. built-in warehouse scales for weighing materials on hand trucks, illustrated above. When the weighman presses the button on the Printomatic, the weights are printed on the ticket in large distinct figures.

THIRTEEN Fairbanks dial scales with Printomatic Weighers weigh and automatically record all incoming and outgoing shipments at the Chicago warehouse of the Central Steel & Wire Co. The Printomatic Weighers speed up weighing operations and simplify record keeping for the company—and are also equipped to furnish customers with a printed weigh ticket with each shipment.

For detailed information without obligation on your weighing problem, write Dept. 96, Fairbanks, Morse & Co., 600 S. Michigan Ave., Chicago, Ill. And 40 principal cities—a service station at each house.

7415-SA40.60

FAIRBANKS-MORSE

DIESEL ENGINES · PUMPS · ELECTRICAL MACHINERY · FAIRBANKS SCALES · RAILROAD EQUIPMENT · WATER SYSTEMS · REFRIGERATORS · RADIOS · WASHERS · FARM EQUIPMENT · STOKERS · AIR CONDITIONERS

Scales

Behind the Scenes with STEEL

Back Again

■ Did you miss us last week? Were you one of the thousands who sent in the letters and telegrams asking for our health, our pursuit of happiness, and our future? Cause of omission was a bit of grippe that had us flat on our back, with meals in bed, lots of sympathy from the missus, etc. Best comments to date came from L. L. Markel, works manager, Chicago-Hutchins Corp., Warren, O. He says that even if STEEL does carry all the *meat* of the trade, he wants the *nut* too. He threatens to blacklist the v.p. who left us out and to insist he double our space. We just can't quite make up our mind whether Mr. Markel is our friend or sly enemy.

Pittsburgh Plug

■ Over in Pittsburgh, they tell us that Richard L. Gridley runs a pretty substantial business column in the *Pittsburgh Press*. We agree, and want to go on record as saying Mr. Gridley knows his business papers as well as his business prophecies. Last week he spotlighted STEEL's June 6 editorial and pointed out how STEEL's forward looking policy is outstanding among the average trade papers which are usually dull affairs published for the interest of the particular industry in which it circulates. He referred to STEEL's constructive criticisms on recent price announcements by the steel producers.

Erratic Editors

■ As we may have told you before, our editors have a lot of fun using the suction tubes on the ninth floor to send their copy awhizzing down to the composition dept. and then in turn getting the galley proofs back the same way. Usually they play with little commotion but in the rush last week Frank Briggs of the *Daily Metal Trade* put a little too much umph into his shaking the proofs out of the tube and socko went the tube through the nice glass partition opposite young Walt Campbell. Bill Gude, talking on the phone, makes a quick move to see who hit whom and knocks the big brass cuspidor half way across the room, cigar butts and water splashing all over the floor. Building manager, Harry Ritchie came astomping down the hall to do his act and someone opens the window to allow a gust of wind to send page proofs sailing around like snowflakes. That was when we figured it might be safer back in our own little cubby hole, and we haven't ventured out since.

Big Haul

■ Guess we'll just have to break down and tell all (and hope we're right). No one seemed to come close to our version of the railroad which hauls the heaviest tonnage per mile of any in the world. The little known champ is the Aliquippa & Southern which runs along the river out of Pittsburgh hauling stuff to J. & L.'s Aliquippa works. Next in line is second cousin Monongahela Connecting railroad.

Best Friend

■ Will you excuse us, please, if we use just a couple of lines to say a few nice things about our cocker spaniel. King has been part of the family for a long time and he was without a doubt the most friendly little cuss we've ever chummed around with. He understood us just about perfectly and we confided in each other on a lot of things. He liked to be the center of attraction, of course, and usually was, so we just know he'll be as proud as the dickens to have this in print about him. He was smart, too, and could understand nearly everything except about automobiles. He just thought they were fun to ride in and for that reason, you see, he died last week.

—SHRDLU

135 tons, grade and high school, Peru, N. Y., to Vermont Structural Steel Corp., Burlington, Vt.

130 tons, engine house and sheave stands, Calumet & Hecla Consolidated Copper Co., Calumet, Mich., to American Bridge Co., Pittsburgh.

125 tons, building, Buffalo Niagara Electric Corp., to R. S. McManus Steel Construction Corp., Buffalo.

125 tons, 400 tunnel ribs, metropolitan water district, Los Angeles, specification 281, to Commercial Shearing & Stamping Co., Youngstown, O.

105 tons, bridge sec. 22XIV-F, Logan county, Lincoln, Ill., to Continental Bridge Co., Chicago.

100 tons, four oil derricks for Union Pacific railroad, Long Beach, Calif., to unnamed interest.

100 tons, building addition, hog slaughtering plant, Ottumwa, Iowa, to Ottumwa Bridge & Construction Co., Ottumwa.

100 tons, bridge, USDA 6-A-1, Lincoln county, Mississippi, to Pidgeon-Thomas Iron Co., Memphis, Tenn.

100 tons, bridge, Central Railroad of New Jersey, Elizabeth, N. J., to Phoenix Bridge Co., Philadelphia; through Ell-Dorer Contracting Co., Newark, N. J.

Unstated tonnage, power house superstructure, Kansas Electric Power Co., Cameron Bluffs, Kans., to Missouri Valley Bridge & Iron Co., Cameron Bluffs, Kans.; W. F. Edgell & Son, Leavenworth, Kans., general contractor.

Shape Contracts Pending

11,000 tons, sheet piling, United States engineer office, Los Angeles, proposal 583; bids opened, all identical figures.

7000 tons, subway, sections 7 and 8, route 110, Brooklyn, N. Y.; bids July 8, board of transportation, New York.

5000 tons, bridge over Sacramento river, Redding, Calif., for bureau of reclamation; bids being taken.

4500 tons, bridge, over Pennsylvania avenue, Washington; bids July 8 to District of Columbia commission.

4280 tons, seven highway bridges, state of Oklahoma; bids in.

3000 tons, two plane hangars, North Beach, N. Y.; bids June 27 to procurement division treasury department, New York.

2000 tons, parcel post, building, Los Angeles; bids being taken.

1600 tons, hangar, Hickman field, Honolulu, T. H.

1600 tons, sheet piling for retaining wall, Little Rock, Ark.; bids June 20.

1500 tons, public school 244, Brooklyn, N. Y.; bids June 21, steel direct, board of education, New York.

750 tons, British building, world's fair, New York.

700 tons, building, Viscose Co., Nitro, W. Va.; bids June 21.

570 tons, public school 213, Brooklyn, N. Y.; bids June 21, steel direct, board of education, New York.

500 tons, building, Flower hospital, New York.

456 tons, sheet piling for retaining wall, Topeka, Kans.; bids in.

400 tons, Rock Island railroad bridge, Bureau, Ill.

400 tons, bridges, Chickamauga dam, Alabama, for Tennessee Valley Authority.

400 tons, state bridge, PWA-409-B, Austin, Colo.

375 tons, bridge, Indianapolis.

350 tons, Great Northern railroad bridges, South Dakota and Washington.

350 tons, dimension mills, Kenwood Corp., Mill Creek, W. Va.

320 tons, building, Scottish Rite temple, Washington.

303 tons, bridge near Delta, Delta county, Colorado; bids in.
300 tons, eight bridges, scattered locations, state of Wisconsin; bids in.
285 tons, Loew's process stage, Culver City, Calif.
284 tons, bridge, Leavenworth, Ind.
275 tons, resettlement project, Dailey, W. Va.
250 tons, building, General Electric Co., World's fair, New York.
250 tons, state bridge, Steuben county, New York; bids June 21.
250 tons, building, Mutual Sunset Lamp Co., New Brunswick, N. J.
215 tons, bridge over relief canal, New Orleans, La.
200 tons, school, Cambridge, Mass.
200 tons, beam spans, various locations, Kentucky, for U. S. department of agriculture.
175 tons, state bridge, Broome county, New York; bids June 21.
160 tons, addition, municipal power plant, Painesville, O.; DeHammel Construction Co., Cleveland, low.
150 tons, Oregon state overcrossing at Portland; Birkmeier & Saramel, Portland, general contractor.
150 tons, bath house and pavilion, Beaver Park, Grand Island, N. Y.; Joseph P. Snyder, Buffalo, low on general contract.
140 tons, building, Sacred Heart church, Oshkosh, Wis.
130 tons, museum, naval academy, Annapolis, Md.
120 tons, Clerk street bridge, Trenton, N. J.; bids June 27.
108 tons, two-span web flange beam bridge, state project 234-M, Stowe, Vt.; Charles A. E. La Rose, Ware, Mass., low on total contract, $21,977.25; bidding $8500 lump sum on bridge only, June 10, Montpelier, Vt.
100 tons, shapes and bars, two I-beam bridges, Westford-Underhill, Vt.; Lane Construction Co., Meriden, Conn., low at $132,441.67, which includes highway section, June 10, Montpelier, Vt.
100 tons, shapes and bars, bridges, Vermont, Brownsville, June 30, and Wilmington, June 28, latter reinforced concrete structure.
100 tons, wool warehouse, Boston.
100 tons, garage, International Harvester Co., Portland, Me.
100 tons, coal handling equipment, Milford, Del.; bids June 27, includes sheet and H-piling.
100 tons, freight yard extension, New Haven railroad, Harlem, N. J.
100 tons, highway work, Layston, N. J.; bids June 29, includes sheet and H-piling and reinforcing bars.
Unstated tonnage, pier noses and bolt assemblies for Coulee dam, spec. 1080-D; bids to reclamation bureau, Denver, June 23.

Reinforcing

Reinforcing Bar Prices, Page 77

Philadelphia — Volume of alteration and addition work is disappointing and order backlogs of fabricating shops are shrinking. Fabricated prices remain weak.

Boston—Contracts for 300 tons, highway and bridge, Maine, have been placed with the Portland, Me., distributor with most purchases in other districts for small lots only. A Providence, R. I., contractor will buy 240 tons, mostly mesh, for Connecticut highways. More small lots from 25 to 50 tons are active. Prices are weak with contractors taking full advantage of competition among sellers of both bars and mesh.

San Francisco—Awards on 21 projects calling for reinforcing bars were placed during the week and aggregated 1812 tons, bringing the total to date to 45,904 tons, compared with 41,366 tons in 1937. Interest now centers around the opening of bids this week on 7000 tons for the United States engineer office, Los Angeles. The two low bidders on 1669 tons for the United States Indian Irrigation Service, Los Angeles, quoted identical amounts at $69,113 f.o.b. plant.

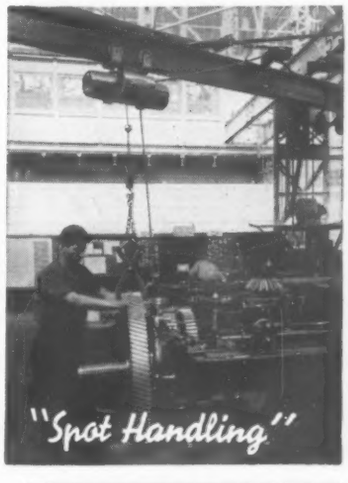
Seattle—Conditions show no improvement, with demand remaining spotty and large projects lacking, but prices continue firm. Mill operations are restricted. Bethlehem Steel Co., Seattle, has taken 460 tons involved in a state overcrossing at Pullman, Wash. Business pending is of small proportions and includes

WAKE UP AND LIFT - WITH A ZIP-LIFT!

You have to be smart these days to cut your machining costs still lower, and to keep production going on a smoother, more economical basis. It's smart to install Zip-Lifts—to save your machinist's effort and cut your costs to the bone.

HOW THESE ZIP-LIFTS FIT INTO YOUR ECONOMY PROGRAM

Now, when you're after lower production costs, these Zip-Lifts can save you hundreds of dollars yearly. How? By saving time—by relieving your machinists of back-breaking labor—by floor to floor handling of even the heavy pieces weighing up to 750 lbs. And they quickly pay for themselves—users report savings as high as $2,000.00 a year on one machine. Easy to install on existing beams or columns from hook, jib or trolley. Sound interesting? Use coupon below.



The ZIP-LIFT stops waste with

Send this coupon

HARNISCHFEGER CORPORATION
HOISTS · WELDING ELECTRODES · MOTORS P&H EXCAVATORS · ELECTRIC CRANES · ARC WELDERS

Harnischfeger Corporation,
4411 W. National Avenue,
Milwaukee, Wisconsin

Send copy of Bulletin H-2, "Handling Costs Are on the Spot".

Firm name .....
By..... Title.....
Address .....
City..... State.....

about 400 tons for reclamation projects in Montana and Wyoming, bids in. Prospects are not promising for third quarter.

Chicago—While awards are reported unimproved, inquiries pending are more numerous. A water works at Grand Rapids, Mich., requires 865 tons and highway work in Iowa and Illinois involves another 550 tons. Bureau of reclamation projects in the west call for 450 tons, while numerous smaller inquiries involve bridges, sewage systems and small construction jobs.

Reinforcing Steel Awards

700 tons, plant buildings, Ecusta Paper Corp., near Brevard, N. C., to Bethlehem Steel Co., Bethlehem, Pa.; Fiske-Carter Construction Co., Greenville, S. C., general contractor.

460 tons, Washington state overcrossing, Pullman, to Bethlehem Steel Co., Seattle; Rumsey & Co., Seattle, general contractor.

400 tons, bureau of reclamation, invitation 21,080-A, Caldwell, Idaho, to Colorado Fuel & Iron Co., Pueblo, Colo.

308 tons, mesh, highway project ESP 38-4, Eastern State parkway, sections 4 and 5, Dutchess county, New York, to Wickwire-Spencer Steel Co., New York; John Arborio Inc., Poughkeepsie, N. Y., general contractor, $261,265; bids May 17, Albany.

300 tons, approach foundations, Lincoln tunnel route to Prospect avenue, North Bergen, N. J., to Bethlehem Steel Co., Bethlehem, Pa.; through I. B. Miller Co., New York.

200 tons, bureau of reclamation, invitation B-42,070-A, Calixico, Calif., to Bethlehem Steel Co., Bethlehem, Pa.

200 tons, highway, Auburn, Me., to Bancroft & Martin Rolling Mill Co., Portland, Me.

140 tons, substructure, Savannah river bridge, Richmond county, Georgia, to Bethlehem Steel Co., Bethlehem, Pa.; W. F. Scott & Co., Thomasville, Ga., general contractor.

130 tons, two bridges, Calaveras county, California, for state, to Ceco Steel Products Corp., San Francisco.

101 tons, highway work, Stanislaus county, California, for state, to Soule Steel Co., San Francisco.

100 tons, building addition, state cancer clinic, Buffalo, to Bethlehem Steel Co., Bethlehem, Pa.

100 tons, Danforth street railroad crossing, Portland Terminal, Portland, Me., to Bancroft & Martin Rolling Mill Co., Portland, Me.; Coleman Bros. Corp., Boston, general contractor.

Reinforcing Steel Pending

7000 tons, United States engineer office, Los Angeles, proposal 598; bids opened.

4000 tons, bureau of reclamation, Denver; bids June 22, proposal A-38090-A.

2350 tons, government printing building, Washington, to Sweets Steel Co., Williamsport, Pa.

1265 tons, highway bridges, state of Oklahoma; bids in.

1000 tons, bridge, over Pennsylvania avenue, Washington; bids July 8 to District of Columbia commission.

680 tons, subway sections 7 and 8, route 110, Brooklyn, N. Y.; bids July 8 to board of transportation, New York.

400 tons, old soldiers' home, Dayton, O.

300 tons, retaining wall, Little Rock, Ark.; bids in.

300 tons, highway construction, state of Iowa.

250 tons, highway construction, Lake county, Illinois.

250 tons, high school building, Wauwatosa, Wis.

240 tons, mostly mesh, two contracts, highway sections, Hamden, Conn., M. A. Gammino Construction Co. Inc., Providence, R. I., low; bids June 14, Hartford, Conn.

225 tons, river bank improvement, Minneapolis.

221 tons, United States engineer office, Los Angeles, proposal 595; bids opened.

190 tons, automobile parking ramp, Washington.

186 tons, highway work, Orange county, California, for county; bids June 28.

172 tons, retaining wall, Topeka, Kans.; bids in.

163 tons, bureau of reclamation, invitation B-47,131-A, Coram, Calif.; bids opened.

137 tons, high school, Coalinga, Calif.; bids opened.

130 tons, sewage disposal plant, Wooster, O.; Holms Construction Co., Wooster, low.

120 tons, Dry Creek bridge near Marysville, Yuba county, California, for state; bids opened.

120 tons, sanitary district sewer, Chicago.

104 tons, bureau of reclamation, invitation A-22,360-A, Parco, Wyo.; bids opened.

100 tons, state highway bridge, Racine, Wis.

Concrete Bars Compared

	Tons
Week ended June 18	**3,039**
Week ended June 11	**4,990**
Week ended June 4	**1,705**
This week, 1937	**9,355**
Weekly average, year, 1937	**6,266**
Weekly average, 1938	**5,399**
Weekly average, May	**5,872**
Total to date, 1937	**134,157**
Total to date, 1938	**134,994**

Includes awards of 100 tons or more.

TUBE MILL EQUIPMENT OF MODERN DESIGN

Let us know your problems and we will be glad to be of service to you.

42 years experience in building tube mills.

TAYLOR-WILSON MANUFACTURING CO.
MAIN OFFICE and WORKS
500 Thomson Ave.
McKEES ROCKS, PA.

Pig Iron

Pig Iron Prices, Page 78

Pittsburgh—Small tonnages make up the current movement of pig iron from merchant stacks, mostly in carload lots. Foundry operations are slowly expanding, calling for some additional buying of iron to piece out. This gain in consumption is conservatively increasing. One of the two active stacks of Carnegie-Illinois Steel Corp. at its Mingo Junction, O., works has blown out. The blown-out stack had been producing bessemer iron.

Cleveland — Foundry operations are substantially unchanged at two or three days a week. With operating schedules so low there is no incentive to specify for other than actual needs, despite the fact inventories are relatively small, as illustrated by demand for prompt delivery on current orders. Producers expect June shipments to decline moderately from May. Opening of books for third quarter has not stimulated demand.

Boston—Although not materially reflected in pig iron buying, in spots there is a slight gain in foundry operations. The shoe machinery plant at Beverly, Mass., and one or two producers of malleable castings have stepped up operations 15 to 20

per cent. The mild improvement is the first in the foundry industry in months. Iron purchases, however, continue to be made in small lots by consumers lacking supplies with the larger melters doing little buying, still drawing on stocks. Textile machinery melt is at a low point, but builders of such equipment have a large volume of potential orders held in abeyance. Pig iron prices are firmly held.

Chicago—Shipments for the first half of June are comparable to those for the corresponding period in May. However, estimates are tonnage for entire month will show a decrease. Buying is still in small lots and is restricted to immediate needs.

New York—Pig iron sellers look for a decline in specifications for June, as compared with May. Stocks at the larger consuming plants are shrinking, but no early replacement buying is expected. Meanwhile, melt is easing off and this should be reflected in the hand-to-mouth purchases of smaller consumers, who, having virtually no stocks on hand, account for most of present activity. Export buying is lagging, with inquiries relatively light and few developing into actual orders. Most foreign inquiries, incidentally, are for special irons.

Philadelphia — Character of pig iron buying shows no changes. Some foundries are pouring no more than one or two heats weekly and requirements consequently are restricted. Most ordering is for carlots or less. Imports include 502 tons of Dutch iron to Baltimore last month. Little discussion of prices is heard.

Buffalo—Pig iron shipments for the first half of June were just about on par with the previous month for producers operating, but total volume is smaller as fewer producers are active. The automotive industry is doing little buying.

Cincinnati—Pig iron shipments are off from the May rate, in some quarters as much as one-third. Foundry operations are slower, averaging two or three light heats a week, with some interests planning shutdowns, for ten days or two weeks, in July for vacations. Demand for machine tool castings has declined from the early 1938 levels.

St. Louis—Pig iron is spotty, but the market is not altogether unsatisfactory, and declining inventories hold prospects for continued moderate buying through the summer and early fall.

Birmingham, Ala.—Six furnaces continue in blast in Alabama to supply a spotty pig iron market, but there is likelihood of a reduction next week. Melters, nevertheless, view the situation with more confidence on the assumption public spending will bolster the market through the cast iron pipe industry.

Toronto, Ont.—With Canadian industrial operations expanding, demand for merchant pig iron is keeping pace. Sales for the past week reached a total of 2500 tons, with additional deliveries against contract of some 2000 tons. Local blast furnace representatives state melters are showing more interest in the market and they look for larger tonnage booking for third quarter, when books open within the next week or ten days. The daily melt is holding in excess of 70 per cent of capacity with a higher ratio predicted later in the year. Production continues unchanged with six stacks blowing. Imports of iron are confined to special grade lots from the United States, while some iron is being exported from Canada to Britain.

Scrap

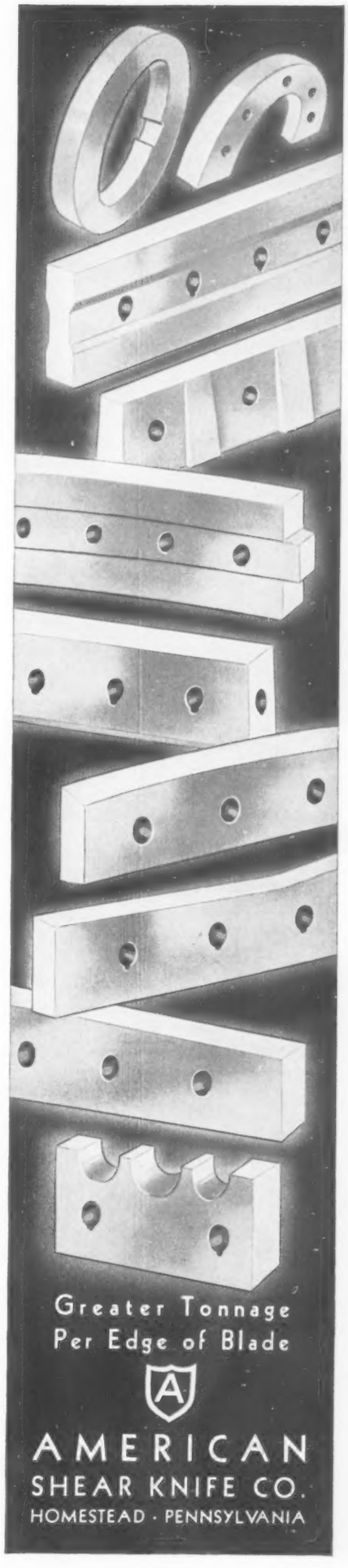
Scrap Prices, Page 80

Pittsburgh—A slight rebound in No. 1 heavy melting steel and compressed sheets to $11 to $11.50 for No. 1, delivered, and $10 to $10.50 for No. 2 is noted, following a sale of No. 1 made a fortnight ago at $10.75. No evidence appears here of a sale allegedly made at $10.25. Scrap is being held closely and supplies of steel grades are limited. Shipments also are limited, being restricted to a few carloads at the most.

Chicago — Prices have ceased their decline although there has been no activity. Heavy melting steel is still at $9.50 to $10. Mills are giving no indication of buying but sentiment among dealers and brokers is better in view of anticipated requirements of mills as early as August. Prices on most items are nominal and little further decline is looked for.

Boston—Scrap prices, dragging bottom for several weeks, are firmer on several grades for domestic shipment and slightly more active in small lots. Some stove plate has sold for district delivery at close to $9, delivered and for Worcester $11.25 has been offered for low phos steel material. Cast grades are generally unchanged, but steadier. For export, prices are unchanged, but brokers are not pressing for material yet against recent export sales.

New York — A spread of $1 a ton for both grades of heavy melting steel for export, barge delivery, continues to muddle the situa-



tion as to boat requirements. One broker, not participating in the recent sale to the European cartel, is bidding $9.50 for No. 1, barge. Those involved in the sale are offering $8.50. The same situation prevails at Newark, N. J. Nevertheless shippers offering the lower price have a heavy tonnage of heavy melting steel available to meet cargo requirements in the immediate future, some of which was bought earlier for Japan and held on barge.

Philadelphia—Sentiment in the scrap trade is definitely improved and it is believed the bottom has been reached. No new business is reported in No. 1 steel following sale of 4000 to 5000 to nearby mills at $11.50. Brokers are also paying $11.50 for steel to apply on contracts. Against the new export order over $10 for No. 1 and $9 for No. 2 are reported offered. Stove plate and cast are stronger with brokers paying $11 and $13, respectively, against orders. Smaller consumers are showing more interest in future requirements. Supplies of steelmaking grades are reported relatively scarce.

Buffalo — With the chief consumer still finding scrap scarce at its bid of $10.50 a ton for No. 1 heavy melting steel, dealers are hoping the market may now be riding bottom.

Detroit—Beyond a small tonnage of Fisher Body bundles, there has been nothing to test the scrap market, but there is a feeling that the bottom has been reached and that the trend will be upward. A local dealer, in casting up his accounts for May, discovered he had operated at a small profit for the first month this year.

Cincinnati — Conditions are unchanged in the iron and steel scrap market. Buying in other districts for export has not had even a sentimental effect here. Mills refuse to augment scrap stocks, and dealers hold a sideline position.

St. Louis—Almost complete absence of buying and dwindling orders in brokers' hands have brought the iron and steel market to a standstill. Offerings by railroads and country dealers are somewhat more generous than heretofore, which fact, coupled with lack of demand, has served to emphasize current weakness. A few cuts in quotations were made, mainly adjustments, as the list generally lacks selling tests upon which to predicate actual values.

Seattle—Sales are restricted to small lots. In the absence of representative deals it is difficult to quote prices. Speaking generally the situation continues weak with the Orient placing no business and domestic mills out of the market.

Toronto, Ont.—Trading in iron and steel scrap continues specialized, but local dealers report increased turnover in the active lines. Machinery cast and stove plate are in demand and there also is good call for wrought scrap from foundries. Steel mills are in the market for heavy melting steel and are taking all offerings by dealers. Turnings show more action with better deliveries being made to Canadian consumers.

OUR AIM is to render service. A little more complete . . . more hospitable...more pleasing . . . than even the most exacting guest expects.

CHAS. H. LOTT
Manager

Every Room Outside with Private Bath
Single from $2.50
Double from $4.00

DETROIT LELAND HOTEL

CASS AT BAGLEY AVE.
GARAGE IN CONNECTION

Warehouse

Warehouse Prices, Page 79

New York — Demand for stainless, notably sheets, is holding well with most jobbers. Warehouse volume as a whole, however, is slightly trailing that of last month, a few distributors in northern New Jersey being exceptions. There are fewer sheet seconds appearing in this district, but still enough to be an unsettling factor.

Cleveland—Sales and shipments out of warehouse continue to ease gradually. Present estimates for June place total volume of shipments 5 to 10 per cent below May.

Chicago — Warehouse sales during the first half of June showed only a slight decline compared with the corresponding period in May. Decrease was small enough to remain in line with previous expectations and did not prove disappointing.

Philadelphia — Jobbers have not revised prices of sheet and strip in line with recent decline in mill bases since they point out that a number of uncertainties remain to be settled. No action has been taken on galvanized sheets. Business is spotty but about on par with May.

Buffalo — Although the improvement is not steady, total warehouse sales in the first two weeks of June were just a shade above May. Distributors report spasmodic buying flurries are not sustained. Some readjustment in prices is expected as soon as mills take a definite stand on quotations for galvanized sheets.

Cincinnati — Due to improvement in buying June volume from warehouses may show an increase, even though sales have again reverted to previously established levels. Inquiries for steel on building projects are disappearing. Prices are unchanged.

Iron Ore

Iron Ore Prices, Page 80

Cleveland—Lake Superior iron ore consumed by blast furnaces during May amounted to 1,711,146 gross tons, according to the Lake Superior Iron Ore association. This was slightly less than in April. It was only 32 per cent of the 5,339,925 tons consumed in May last year. Stocks of iron ore at lower lake ports and furnaces June 1 were approximately 11,500,000 tons more than on the comparable date a year ago. Total ore on hand at lower lake ports and furnaces on June 1 follow:

	Furnaces	Lake Erie docks	Totals
June 1..	27,768,441	5,243,533	33,011,974
Mo. ago.	28,280,824	5,395,509	33,676,333
Year ago	16,255,378	2,544,190	18,799,568

Nonferrous Metals

New York—Curtailment of copper production both domestic and foreign, and a sharp advance in tin prices were the chief developments in nonferrous metals last week. Sentiment became more cheerful also on passage of the government's recovery-relief program, relieving the downward pressure on prices.

Copper—Kennecott Copper Corp.'s plan to suspend practically all domestic operations became effective on Thursday. This augments partial curtailment of production announced previously by other large producers. On Friday London cables announced that foreign producers had cut the output quota for cartel members to 95 per cent of the basic rate from 105, or approximately 7100 tons per month. The world market is becoming more firmly established despite the recent steady increase in stocks. Export copper advanced to around 8.65c, c.i.f., while electrolytic held here at 9.00c, Connecticut.

Lead—Sales continued fairly active for the second successive week, leading some observers to believe that the market was headed for a higher level. Prices were unchanged at 4.00c, New York, and 3.85c, East St. Louis.

Zinc—Demand continued light but offerings were limited. Producers were reluctant to dispose of stocks on the low basis of 4.00c, East St. Louis, for prime western.

Tin—Strength in tin was attributed to the reduction in output quotas to 45 per cent for the third quarter and to speculative buying stimulated by expectations of favorable action by the International Tin committee in London on Monday.

Steel in Europe

Foreign Steel Prices, Page 79

London—(*By Cable*)—Production of steel in Great Britain in May was 957,000 tons, a gain of 18,400 tons over April. At the same time pig iron production declined 27,100 tons, to 633,900 tons in May from 661,000 tons in April. Imports of steel and iron in May showed a further drop, the May total being 55,665 tons, compared with 61,500 tons in April. Exports made a slight loss, the May total being 167,522 tons, compared with 172,700 tons in April.

Some recovery in domestic demand for pig iron is expected when current stocks are reduced. Imports of iron now are negligible. Two stacks in South Durham are being blown out. The steel trade is quiet and demand for sheets is

Nonferrous Metal Prices

Spot unless otherwise specified. Cents per pound

June	Copper Electro, del. Conn.	Copper Lake, del. Midwest	Copper Casting, refinery	Straits Tin, New York Spot	Straits Tin, New York Futures	Lead N. Y.	Lead East St. L.	Zinc St. L.	Aluminum 99%	Antimony Amer. Spot, N.Y.	Nickel Cathodes
11	9.00	9.12½	8.52½	39.37½	39.50	4.00	3.85	4.00	20.00	11.75	35.00
13	9.00	9.12½	8.52½	39.00	39.15	4.00	3.85	4.00	20.00	11.75	35.00
14	9.00	9.12½	8.52½	38.70	38.85	4.00	3.85	4.00	20.00	11.75	35.00
15	9.00	9.12½	8.52½	39.10	39.25	4.00	3.85	4.00	20.00	11.75	35.00
16	9.00	9.12½	8.52½	39.75	39.90	4.00	3.85	4.00	20.00	11.75	35.00
17	9.00	9.12½	8.52½	40.75	40.90	4.00	3.85	4.00	20.00	11.75	35.00

MILL PRODUCTS

F.o.b. mill base, cents per lb. except as specified. Copper brass products based on 9.00c Conn. copper

Sheets

Yellow brass (high) 15.62½
Copper, hot rolled 17.12½
Lead, cut to jobbers 7.25
Zinc, 100-lb. base 9.75

Tubes

High, yellow brass 18.37½
Seamless copper 17.62½

Rods

High yellow brass 11.62½
Copper, hot rolled 13.62½

Anodes

Copper, untrimmed 14.37½

Wire

Yellow brass (high) 15.87½

OLD METALS

Nom. Del. buying prices

No. 1 Composition Red Brass

New York 4.50-4.75
Cleveland 5.00-5.25
*Chicago 4.75-5.00
*St. Louis 4.25- 4.50

Heavy Copper and Wire

*New York, No. 1 ..... 6.37½-6.62½
Cleveland, No. 1 ..... 6.00-6.25
*Chicago, No. 1 ..... 6.25-6.50
*St. Louis 5.50-6.00

Composition Brass Borings

New York 3.75-4.00

Light Copper

*New York 4.75-4.77½
Cleveland 4.50-4.75
*Chicago 4.62½-5.12½
*St. Louis 3.75-4.00

Light Brass

Cleveland 2.75-3.00
*Chicago 2.87½-3.12½
*St. Louis 2.25-2.50

Lead

*New York 3.00-3.25
Cleveland 2.75-3.00
Chicago 2.75-3.00
*St. Louis 2.50-2.75

Zinc

New York 1.75-1.87½
Cleveland 1.50-1.75
St. Louis 1.50-1.75

Aluminum

Borings, Cleveland 4.00-4.25
Mixed, cast, Cleveland 6.00-6.25
Clips, soft, Cleveland 11.50-11.75
Mixed, cast, St. Louis 6.50-7.00

SECONDARY METALS

Brass ingot, 85-5-5-5, less carloads ... 9.25
Standard No. 12 aluminum ... 14.00-14.50

A friendly welcome.

Food that is famous.

Instant, willing service.

Rooms with every detail planned for restful comfort.

Convenience that saves time and taxi fare. Hotel Cleveland adjoins the Union Terminal and Terminal group, and is at the very heart of Cleveland, Ohio.

HOTEL CLEVELAND Cleveland

stagnant, with tin plate buying light.

The Continent reports markets quiet. Merchant bar inquiry is improving and prices are firmer.

Renewal of the European steel cartel has been accomplished, under the same conditions as prevailed previously. No change in prices has been made. Report from Paris is that a cartel in cold-rolled sheets is definitely assured with Germany allotted 50 per cent, Belgium 30 per cent, France 12 per cent and Luxemburg 8 per cent.

Standard Diesel Engine Co. Equipment at Auction

■ Machine tools, equipment, service rights and good will of Standard Diesel Engine Co., successor to Standard Motor Construction Co. Inc., Jersey City, N. J., will be sold at receiver's sale June 21, on the premises, 150 Whiton street. Samuel T. Freeman & Co., New York, are in charge as auctioneers.

The sale covers a large variety of machine shop, sheet metal, woodworking, blacksmith, heat treating toolroom and miscellaneous shop equipment, about 100 tons of castings and other parts, finished engines, nine water brakes, service rights, drawings, patterns, jigs and other items.

Equipment

Boston—Low industrial operations and general uncertainty hold up a large volume of machine tool business. Meanwhile most orders are for one or two machines at a time. Part of such business is shipped from stock and shops without foreign backlogs, with few exceptions, are doing little in the way of assembly. Some with export orders are slightly less active and few are operating better than 30 hours weekly with one shift. Small tool shops are doing little with curtailed crews. Springfield, Mass., armory has bids on 22 various types of cutters, form mills and end mills.

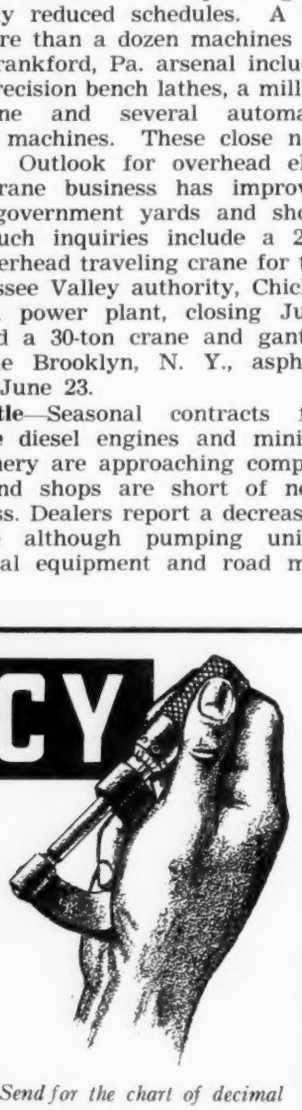
New York—Machine tool orders are generally limited to single units which are frequently shipped from stock. Most builders have depleted domestic backlogs while some with foreign business are operating on slightly reduced schedules. A list of more than a dozen machines for the Frankford, Pa. arsenal includes five precision bench lathes, a milling machine and several automatic screw machines. These close next week. Outlook for overhead electric crane business has improved with government yards and shops and such inquiries include a 275-ton overhead traveling crane for the Tennessee Valley authority, Chickamauga power plant, closing June 24, and a 30-ton crane and gantry for the Brooklyn, N. Y., asphalt plant, June 23.

Seattle—Seasonal contracts for marine diesel engines and mining machinery are approaching completion and shops are short of new business. Dealers report a decreased volume although pumping units, electrical equipment and road machinery items are in fair demand. Labor disputes, affecting the canning industries, and generally decreased turnover of logs and lumber, have affected machinery and equipment sales. U. S. engineer, Portland, Oreg., opened bids June 9 for five pumping units for a Columbia river project. A 200-ton pontoon dredge, built in California, has been shipped to the Forty-Mile gold district, Alaska. White Pass & Yukon Ry. has purchased from the Perrine Machinery Co., Seattle, a 30-ton wheel lathe, radial drills, bolt cutters and other equipment for the shops at Skagway, Alaska.

Chicago — Sales of machine tools and equipment in general have shown a marked decline here since the first of the month and the downward trend has been farther than was expected. Santa Fe has made no recent purchases from the large list they put out some time ago and it is now expected that a new list will be issued before buying is resumed. It is reported Atlas Press Co., Kalamazoo, Mich., has received an order for shop machinery totaling $86,000, with completion of deliveries scheduled for the last of July.

Cleveland — Machine tool and equipment business continues light, although a fairly steady volume of miscellaneous items are being moved. Some dealers note an upturn in number of orders, although dollar volume is low, due to the fact lighter and simpler machines are in best demand. Substantial increase in domestic orders is confidently expected in September. Local suppliers shared in award of $72,000 equipment for a new vocational high school at Toledo, O.

ACCURACY



Kidd's Micrometer Agrees with Yours

Specializing for 39 years in the production of *drill rods* and cold drawn steels enables us to provide you with the best of material—accurately drawn and heat treated—carefully inspected and smoothly finished.

An "efficiency" product.

—Also regular and special shapes for all purposes.

Send for the chart of decimal equivalents. It's yours for the asking.

KIDD DRAWN STEEL CO.

Aliquippa, Pa.

(Pittsburgh District) *Phone: Aliquippa, 196*

Reader Comments

(*Concluded from Page* 11)

ations should do much to dispel the suspicions which naturally arise in the minds of workers who do not know the inner workings. With the atmosphere cleared of suspicion, propagandists seeking to organize workers for the sake of their dues, on the promise of making the bosses relinquish their alleged ill-gotten gains to the workers, will find less fertile soil to nourish the ideas they seek to implant.

This is an example which may be followed by other industrial organizations to their great profit. I am a worker who thinks he understands something of the problems of management and I think management for the most part is fair-minded.

WORKER

Cleveland.

Construction and Enterprise

New York

ALBANY, N. Y.—Beverwyck Breweries Inc., 156 North Ferry street, plans extensions and improvements to brewery, cost of which is estimated at $45,000 with equipment. General contract has been let to Cassidy & Gallagher, 11 South Lake avenue.

NEW YORK—Reynolds Metals Co., 19 Rector street, has plans for building a one-story addition to its branch plant at 1259-65 South Campbell avenue, Chicago. Cost exceeds $50,000 with equipment. Alexander L. Levy, 179 West Washington street, Chicago, is architect.

SALAMANCA, N. Y.—Erie Railroad Co., Allegheny-Meadville division, has authorized rebuilding part of car and locomotive repair and maintenance shops recently destroyed by fire, and will erect five one-story shop units for forge, machine, parts, etc.

TONAWANDA, N. Y.—Curtiss-Wright Corp. has plans by Albert Kahn Inc., 345 New Center building, Detroit, for 100 x 360-foot manufacturing building, and 48 x 300-foot engineering building and office. Cost to exceed $40,000.

TONAWANDA, N. Y. — Wickwire Spencer Steel Co., river road, Tonawanda, and 41 East Forty-second street, New York, will soon let contract for plant addition to be used as a wire mill. The company expects to proceed as rapidly as possible with the building which will cost about $500,000.

WATERVLIET, N. Y. — Commanding officer, ordnance department, Watervliet arsenal, takes bids until June 30, circular 107, for gages; until July 1, circular 110, one to four turret lathes.

New Jersey

BELLEVILLE, N. J.—T. A. Edison Inc., Lakeside avenue, soon lets contract for constructing one and two-story, 58 x 176-foot administration and factory building. W. C. Bartlett, Bloomfield avenue and Broad street, Bloomfield, N. J., is architect.

IRVINGTON, N. J.—Charles L. Gleeson Co. has leased a building at rear of 35-37 Ellis street, for new plant. Present works will be removed to new location and capacity increased.

NEWARK, N. J.—National Metal Products Corp., 532 Mulberry street, sheet metal products, has acquired a one-story building at 238-40 Astor street and will improve for plant.

NEWARK, N. J.—Star Metal Products Inc., c/o Charles Rosenblum, 66 Goldsmith avenue, president, has leased about 8400 square feet of space in Waverly Terminal building for new plant. The company will make light metal stampings and will conduct general machine works.

Connecticut

DERBY, CONN. — Briesenick-Shelton Co. has acquired a tract of land on Nichols road, near Shelton, Conn., for erection of one-story plant. New equipment will be installed.

Massachusetts

BOSTON—Colonial Beacon Oil Co. Inc., 378 Stuart street, plans new bulk oil storage and distributing plant at Hallowell, Me., for which general contract has been let to H. V. Collins, 4 Westminster street, Providence, R. I. Cost exceeds $50,000 with machinery and equipment.

NORTH QUINCY, MASS.—W. H. Blank, engineer, 120 Milk street, Boston, is taking bids for belt and gravity conveying equipment for paint and varnish manufacturing plant for Norfolk Paint & Varnish Co.

SPRINGFIELD, MASS. — Commanding officer, ordnance department, Springfield armory, will take bids until June 24, circular 275, for one single spindle automatic screw machine; until June 30, circular 279, five chamfering machines; until July 6, circular 287, one automatic milling and centering double-end machine.

Pennsylvania

PHILADELPHIA — Atlantic Refining Co., 260 South Broad street, plans installation of motors and controls, transformers and accessories, regulators, conveyors, electric pumping machinery and other equipment, and extensions and improvements in main oil refining plants here and at Atrico, Tex. Total expenditure estimated in excess of $3,000,000..

Ohio

CLEVELAND—Eberhard Mfg. Co., 5734 Tennyson road, a division of Eastern Malleable Iron Co., will soon complete an extensive plant improvement program. New machinery is being installed in machine shops and the program also includes installation of equipment for a continuous production line in the foundry.

HAMILTON, O.—Hamilton Metal Products Co., Belle avenue and Baltimore & Ohio railroad, is erecting a one-story addition, for which general contract has been let to A. Benzinger & Son, 709 East Ninth street. Estimated cost with equipment $50,000.

JACKSONVILLE, O.—James Williams, mayor, plans to erect pump house and install two deep well electric turbines at cost of $62,000. WPA project. Paul W. Elwell, 5005 Euclid avenue, Cleveland, is consulting engineer.

MARYSVILLE, O.—Fisher Brass Co., manufacturer of brass and bronze products, has let general contract for one-story addition, costing approximately $40,000 with equipment.

SPRINGFIELD, O. — C. O. Romig, Springfield, has been awarded general contract by Steel Products Engineering Co., for erecting a one-story addition, 60 x 160 feet. Cost close to $60,000 with equipment.

Michigan

DETROIT—Roberts Brass Mfg. Co., 5435 West Fort street, plans extensions and improvements costing close to $30,000 with equipment.

DETROIT—Great Lakes Electrical Co., 1620 West Lafayette boulevard, will take bids soon for one-story storage and distributing plant, to cost over $45,000 with equipment.

GRAND RAPIDS, MICH.—American Seating Co. has plans for erection of one-story addition to cost about $45,000 with equipment. (Noted April 11).

LAPEER, MICH.—Bostick Foundry recently sustained damage by fire.

Illinois

CHICAGO—Gregson Tool & Mfg. Corp., 3733-55 North Kilbourne street, has been formed by A. T. Sveinsson, Lawrence Johnson and D. Olafson to engage in general tool and die business. Correspondent: Charles T. Cramer, 33 North La Salle street.

CHICAGO—Lynes Steel Co., 188 West Randolph street, has been incorporated by A. A. Lynes, M. T. Barnett and C. Fells to engage in the sale of processing, manufacturing and machining of steel and allied metal products. Correspondent: Mark T. Barnett, 188 West Randolph street.

CHICAGO—Frank D. Palmer Inc., 224 North Loomis street, has been formed to manufacture, construct and deal in machinery, by C. E. Palmer, R. E. Palmer and F. D. Palmer. Correspondent: Gerald

J. Haley, Burke, Rees & Haley, 127 North Dearborn street.

CHICAGO — Mills Novelty Co., 4110 West Fullerton avenue, maker of vending machines, will establish a new factory branch, storage and distributing plant in a building it has acquired at Eighty-second street and Chester branch of Reading railway, Philadelphia.

CHICAGO—Wrapper Machines Inc., 231 South LaSalle street, has been incorporated to deal in all kinds of machinery, devices, tools, etc., by A. Magnusson, N. T. Pincus and H. J. Dekoven. Correspondent: Brown, Fox & Blumberg, 231 South LaSalle street.

CHICAGO—Peerless Tool & Engineering Co., 4431 West Division street, has been incorporated with 25,000 shares of no par value common, by E. Reither, J. R. Hills and L. Reither, to deal in tools, dies, machines, machine parts and novelties. Correspondent: Edward D. Feinberg, 11 South LaSalle street.

LOCKPORT, ILL.—Plans for the installation of a new machine shop in the Lockport township high school have been announced by the board of trustees.

ROCK ISLAND, ILL.—United States engineer office will take bids until June 23 for one pumping unit with electric motor and accessory parts. Circular 309.

Indiana

INDIANAPOLIS—Carl M. Geupel Construction Co., Hume-Mansur building, has been awarded general contract by Link-Belt Co., 307 North Michigan avenue, Chicago, for one-story addition to its branch plant here, and one-story boiler house. Estimated cost $250,000 with equipment.

Maryland

BALTIMORE—Hunter Baltimore Rye Distillery Inc., 1900 East Fort avenue, has asked bids on general contract for one-story steam power house and one-story pumping plant. Cost exceeds $50,000 with equipment.

District of Columbia

WASHINGTON—Office of general purchasing officer will take bids until 10:30 a.m., June 30, for structural steel and miscellaneous materials for four buildings at Ancon, Canal Zone.

WASHINGTON—Bureau of supplies and accounts, navy department, will take bids until 10 a.m., on the following opening dates: June 24, schedule 3761, gasoline engine-driven electric generators, delivery San Pedro, Calif.; schedule 3765, one motor-driven automatic screw machine, delivery Baldwin, L. I., N. Y.; schedule 3784, one gasoline engine-driven electric welding set, delivery Brooklyn, N. Y.; July 1, schedule 3758, diesel engine-driven generator; circuit breaker and spare parts, delivery Puget Sound, Wash.; schedule 3760, one motor-driven bench type lathe, delivery San Diego, Calif.; schedule 3774, two electric hoists, delivery Boston; July 5, schedule 3763, aluminum and aluminum alloy; schedule 3772, motor generator sets and spare parts, delivery Portsmouth, N. H., and Mare Island, Calif.

Kentucky

LOUISVILLE, KY.—John G. Epping Bottling Works Inc., 712 Logan street, has received low bid from J. D. Jennings, 328 East Breckenridge street, for one and two-story addition to mechanical bottling plant, 30 x 125 feet, to cost $60,000. Carl J. Epping, architect, 806 East Broadway.

Georgia

ROME, GA.—Fox Mfg. Co. will soon let contract for one-story, 45 x 290 foot steel plant addition. O. C. Poundstone, Palmer building, Atlanta, Ga., is architect.

SAVANNAH, GA.—National Gypsum Co., 190 Delaware avenue, Buffalo, has selected a site near here for proposed gypsum plaster and board mill and installations include heavy duty motors and controls, transformers, regulators, conveyors, electric hoists, and other equipment. (Noted May 30).

North Carolina

SALISBURY, N. C.—Salisbury Coca Cola Bottling Co. plans erection of two-story mechanical bottling works and will install power equipment. Temple Snyder is secretary-treasurer.

Tennessee

LEWISBURG, TENN.—Bids recently received for new municipal electrical distributing system have been rejected and new ones will be asked soon. Financing has been arranged through federal aid. Freeland, Roberts & Co., Third National Bank building, Nashville, Tenn., consulting engineer.

Louisiana

NEW ORLEANS—Louisiana Materials Co. Inc., 1510 Julia street, W. L. Stevens, president, plans installation of power equipment in new concrete pipe manufacturing plant. Cost estimated at $50,000. (Noted May 9.)

West Virginia

CLARKSBURG, W. VA.—Monongahela-West Penn Public Service Co., Fairmont, W. Va., plans extensions and improvements in transmission and distributing lines here. Cost estimated at $100,000.

COALBURG, W. VA.—Riverview Mining Co. has let contract to Kanawha Mfg. Co., 1520 Dixie, Charlestown, to rebuild burned coal tipple. Cost $100,000.

NEWELL, W. VA.—Homer Loughlin China Co., A. A. Wells, plant superintendent, plans three new boilers and other steam generating equipment in No. 4 plant. Power plant will be rebuilt and automatic stokers, combustion controls, new boiler feed water pumps and new ash handling equipment are included in equipment to be installed.

Virginia

RICHMOND, VA.—Reorganization is proposed of American Refrigeration Co., and capital increased for purpose of acquiring additional property to erect a building costing $200,000 and installing machinery and equipment, elevators and conveyors, at cost of $90,000. R. T. Lipscombe Sr., industrial engineer, 1425 East Main street, is in charge of project.

Missouri

CARTHAGE, MO.—Leggett & Platt Spring Bed & Mfg. Co., metal springs, and spring mattress units, has bought and will remodel a building at 2003 Oak Lawn avenue, Dallas, Tex., for new branch plant. Cost $60,000 with machinery.

ST. LOUIS—Jackes-Evans Mfg. Co., 4400 North Union boulevard, has let general contract for one-story addition, 40 x 105 feet, to cost about $40,000 with equipment. Company makes stoves and parts and other sheet metal products.

Wisconsin

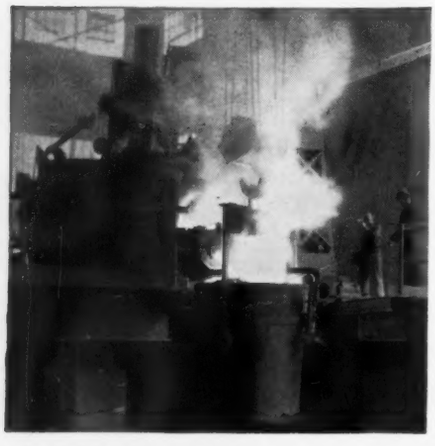
FOND DU LAC, WIS.—A. G. Gardner, Rockford, Ill., has organized Safe-Wings Inc., to purchase former Pheasant Aircraft Co. factory here and engage in manufacture of low-cost planes of his design.

KAUKAUNA, WIS.—Plans are under way for new municipal hydroelectric generating plant with transmission and distributing lines. Financing will be arranged through federal aid. Mead, Ward & Hunt, State Journal building, Madison, Wis., are consulting engineers.

NF

BASIC ELECTRIC STEEL

FORGINGS



N.F.& O. Basic Electric Steel produced under rigid metallurgical control is an important *quality* factor in the ultimate forged product

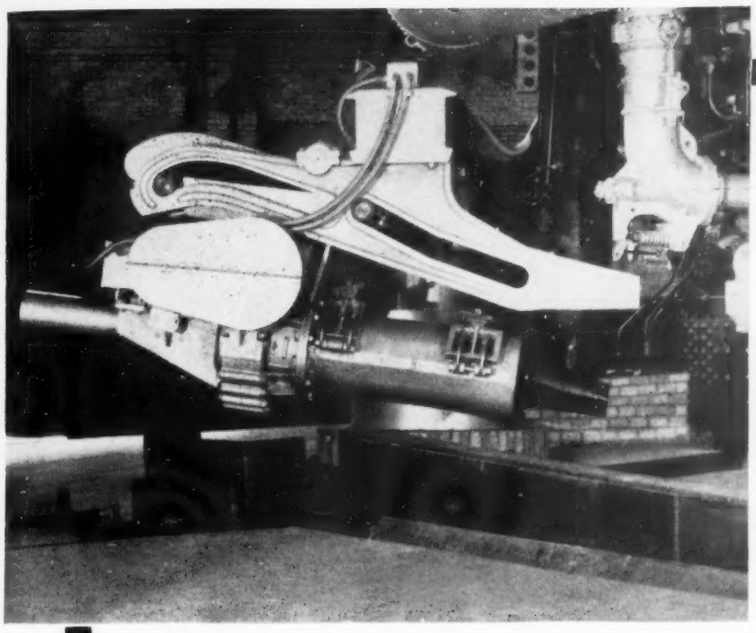
BASIC ELECTRIC STEEL

Carbon, Alloy, Corrosion Resistant and Special Steels Smooth Forged, Hollow Bored, Rough or Finished Machined, Heat Treated to Specifications ...Forging Quality Ingots, Pressed or Hammered Billets.

Die Blocks & Piston Rods

NATIONAL FORGE AND ORDNANCE COMPANY

IRVINE, WARREN COUNTY, PENNA.



Furnace Men!

TAPPING HOLE TROUBLE DISAPPEARS

A STRONG FRONT IS SECURED

NO NEED TO BLANK TUYERES

NO DELAYS AT CASTING TIME

NO INTERRUPTION TO STEADY STOCK DESCENT

NO VARIATION IN POSITION OF TAPPING HOLE

LONGEST LIFE AND LEAST MAINTENANCE

BRASSERT THREE-MOTOR TAPPING HOLE GUN

write for bulletin to

H. A. BRASSERT & COMPANY 310 So. Michigan Avenue **CHICAGO**

Chilled Rolls, and Rolling Mill Machinery

Air Furnace and Gray Iron CASTINGS

Roll Lathes, Sheet and Tin Mill Shears of all kinds; Steam Doublers; Stretcher Levelers and Rolling Mill Machinery built to specification. We shall be glad to figure on your requirements.

The New "RED CIRCLE" Heat Treated Chilled Rolls for SHEET and TIN MILLS

Hyde Park Foundry & Machine Co.
Hyde Park, Pa., U. S. A.
(Pittsburgh District)

Heading Specialists

Economy-minded buyers of made-to-order screws and headed parts are discovering real savings in PROGRESSIVE cold upset products. They have found that many parts now milled from the bar can be headed efficiently and accurately with our modern equipment — at reduced costs. We invite you to submit samples or outline ideas to our specialists. Their advice — intelligently and promptly given — may show you the way to greater fastening economies.

The PROGRESSIVE MFG. CO.
TORRINGTON · · · CONNECTICUT

MERRILL, WIS. — Bergman Machine Co. is taking bids for construction of new shop costing about $30,000 with equipment.

MILWAUKEE — School board has awarded contract to Stoehr & Laudon Inc., 1705 West Clybourn street, for heating, ventilating and temperature control system in new $2,500,000 Pulaski high school here on its low bid of $166,000.

Minnesota

FAIRFAX, MINN.—Bond issue of $35,000 has been approved to finance with WPA aid the construction of a sewage system and disposal plant to cost $100,000. Edward Carver is village recorder. Ellerbe & Co., 1021 First National Bank building, St. Paul, is architect.

JANESVILLE, MINN.—City, George Smith, clerk, is completing plans for construction of a municipal light and power plant and distribution system, generating units, switchboard, diesel engine and auxiliaries to cost $100,000. Bonds have been voted. G. M. Orr & Co., 542 Baker building, Minneapolis, is consulting engineer.

LITCHFIELD, MINN.—City, William Martinson, clerk, is seeking PWA funds for construction of sewage disposal plant at cost of $100,000. Foster & Wahlberg, 316 Medical Arts building, Duluth, is consulting engineer.

NOPEMING, MINN.—St. Louis County Sanitarium commission, Dr. A. T. Laird, secretary, is seeking PWA funds for construction of sewage disposal plant costing $25,000. Foster & Wahlberg, 316 Medical Arts building, Duluth, is consulting engineer.

WALKER, MINN.—Phil Sundby, state purchasing commissioner, St. Paul, is taking bids to June 27, 3 p. m., on furnishing material and equipment for constructing sewage treatment plant. Certified check of 5 per cent to accompany bid. Plans obtainable from owner.

Texas

DALLAS, TEX.—G. & J. Mfg. Co., maker of canning and packing machinery, is erecting a two-story structure for production of canning equipment and air conditioning supplies at a cost of approximately $100,000.

EDINBURG, TEX.—Rio Grande Valley Citrus Exchange, care of D. C. Abney, president, has asked bids for constructing citrus peel dehydrating plant and also for manufacture of dairy feed and fertilizer. Cost $70,000.

Kansas

GODDARD, KANS.—Sedgwick County Rural Electric Co-operative, Lloyd V. Decker, manager, will ask bids about July 1 on construction of approximately 221 miles of rural electric lines to cost $200,000. E. T. Archer & Co., 609 New England building, Kansas City, Mo., is consulting engineer.

Nebraska

ALLIANCE, NEBR.—City, R. W. Laing, clerk, is considering completed plans for constructing power plant building with equipment including new turbine and boiler, and may apply to PWA for grant. Cost will be over $300,000. Black & Veatch, 4706 Broadway, Kansas City, Mo., consulting engineer.

WAYNE, NEBR.—Wayne County Rural Public Power district, A. G. Sydow, president, has filed application with the state department of roads and irrigation, for approval to construct 288 miles rural transmission lines in Wayne county to serve 705 customers at a cost of $303,685. H. H. Henningsen Engineering Co., 326 Union State Bank building, Omaha, Nebr., is consulting engineer.

Iowa

LARCHWOOD, IOWA—City is taking bids to close July 1, 10 a. m., on construction of electric light plant costing about $26,000. Buell & Winter Engineering Co., 508 Insurance Exchange building, Sioux City, Iowa, is consulting engineer.

ROCK RAPIDS, IOWA—REA has approved a $100,000 loan to the Lyon Electric Co-operative to finance construction of 100 miles of rural transmission lines in Lyon county. Plans will be complete about July 1.

SIDNEY, IOWA—Voters approved proposition at election June 8 for improvement and enlargement of waterworks plant, including installation of additional pumps and new engine. H. H. Henningsen Engineering Co., 326 Union State Bank building, Omaha, Nebr., is consulting engineer.

SPENCER, IOWA—REA has tentatively approved a $150,000 loan to be available July 1 to the Clay County Rural Electrification association, M. A. Swanson, secretary, for constructing 150 miles of transmission lines in Clay county.

Montana

LIVINGSTON, MONT.—Shields Valley Rural Electrification association has made application to REA for funds to construct 62.5 miles of rural transmission lines to cost $68,750. Montana State Water Conservation board, J. M. Garrison, engineer, is in charge of REA projects.

Pacific Coast

SACRAMENTO, CALIF. — Bercut-Richards Co., food packer and canner, will rebuild portion of plant, including storage and distributing division, recently destroyed by fire.

WHITTIER, CALIF.—Security Engineering Co., 108 West Whittier boulevard, maker of mechanical equipment and parts, has awarded contract to Consolidated Steel Corp., Arcade station, Los Angeles, for one-story machine shop.

SEATTLE—Washington Nickel Mining & Alloys Inc., American Bank building, is building a plant to smelt an alloy iron ore and produce a pig iron to be marketed under the name of Mincerite.

SPOKANE, WASH.—Frank E. Martin, local builder, has the general contract for construction of a $250,000 sales and service branch structure for International Harvester Co., which will lease from Northern Pacific Railway Co., owner. Building will have 100,000 square feet for offices, show rooms, warehouse, repair shop and modern truck service.

MARSHFIELD, OREG.—Fire caused considerable damage to the plant and equipment of the Western Battery Separator Co. at the C. A. Smith pulp mill, June 10.

TACOMA, WASH.—Fire destroyed the plant of the Tacoma Sash & Door Co. and the warehouse of the Pioneer Sand & Gravel Co. Considerable equipment also was destroyed.

Canada

TILLSONBURG, ONT.—Beaver Foundry & Furnace Works Ltd., R. C. Crandell, general manager, plans plant addition. Site has been purchased. Cost $40,000.

HULL, QUE.—Clerno Quebec Mines Ltd., care of R. Quain, 56 Spark street, Ottawa, plans mine development and purchase of equipment. Estimated cost $25,000.

JOLIETTE, QUE.—Powdered Milk Co-operative, care of J. A. Roy, 88 St. Charles Boromone avenue, plans to build and equip factory, at cost of about $40,000.

NORANDA, QUE.—Wabi Iron Works Ltd., J. Mackay Clements, general manager, New Liskeard, Ont., is preparing plans for building and equipping iron foundry. Cost about $40,000.

ONE OF THE FEW FAMOUS HOTELS IN AMERICA . . .

PREFERRED . . . through three generations by world travelers, and those alert in the social and commercial life of the city.

. . . And when you come VISIT . . . THE HUNT ROOM . . . *Philadelphia's New, Smart Bar-Cafe.*

Rates begin at $3.85

BELLEVUE-STRATFORD

In the Heart of Philadelphia

CLAUDE H. BENNETT
General Manager